

2006 Buick Lucerne CXS

2006 ACCESSORIES & EQUIPMENT Lighting Systems - Lucerne

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Lighting Systems - Lucerne

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

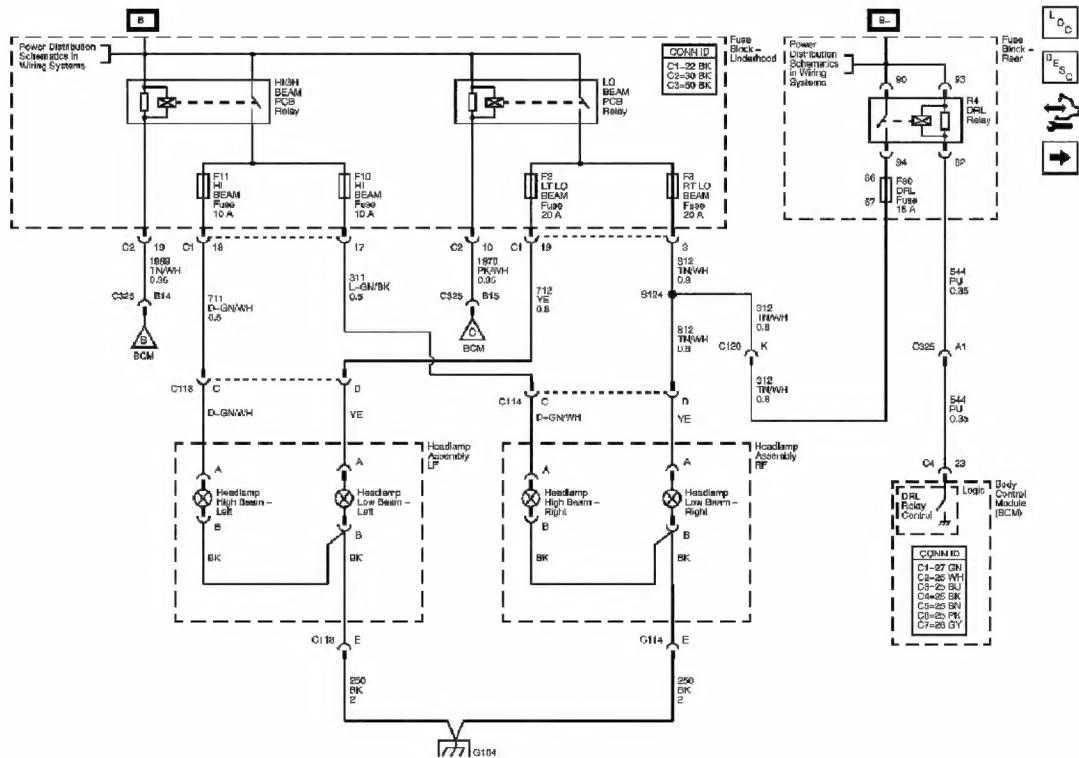
| Application | Specification | |
|--|---------------|----------|
| | Metric | English |
| Accelerator Pedal Assembly Nut | 9 N.m | 80 lb in |
| Brake Pedal Position Sensor Screw | 2 N.m | 18 lb in |
| Front Fog Lamp Assembly Screws | 2 N.m | 18 lb in |
| Headlamp Capsule Retaining Bolts | 6 N.m | 53 lb in |
| Instrument Panel Door Opening Frame Screw | 2 N.m | 18 lb in |
| License Plate Lamp Retaining Screws | 2 N.m | 18 lb in |
| Rear Auxiliary Tail Lamp Mounting Nuts | 10 N.m | 89 lb in |
| Roof Rail Rear Courtesy and Reading Lamp Screw | 2 N.m | 18 lb in |
| Tail Lamp Retaining Nuts | 6 N.m | 53 lb in |

SCHEMATIC AND ROUTING DIAGRAMS

HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) SCHEMATICS

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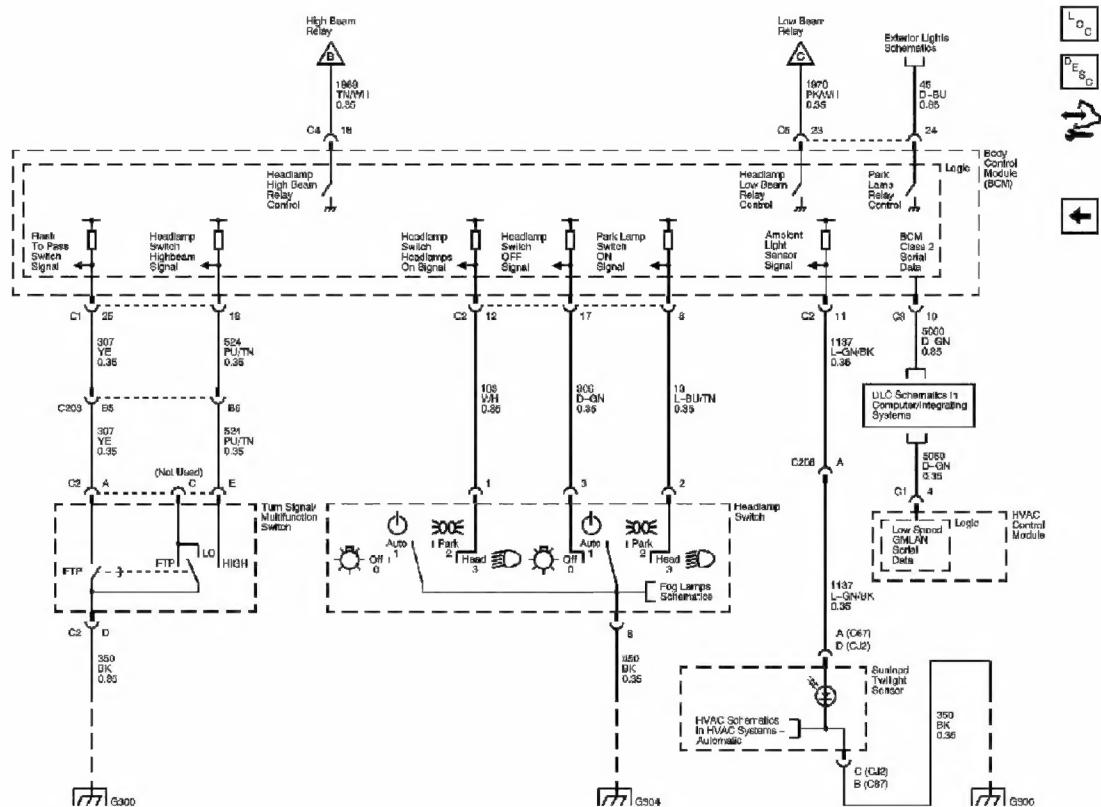


Fig. 2: Headlamp Switch Schematic
Courtesy of GENERAL MOTORS CORP.

FOG LIGHTS SCHEMATICS

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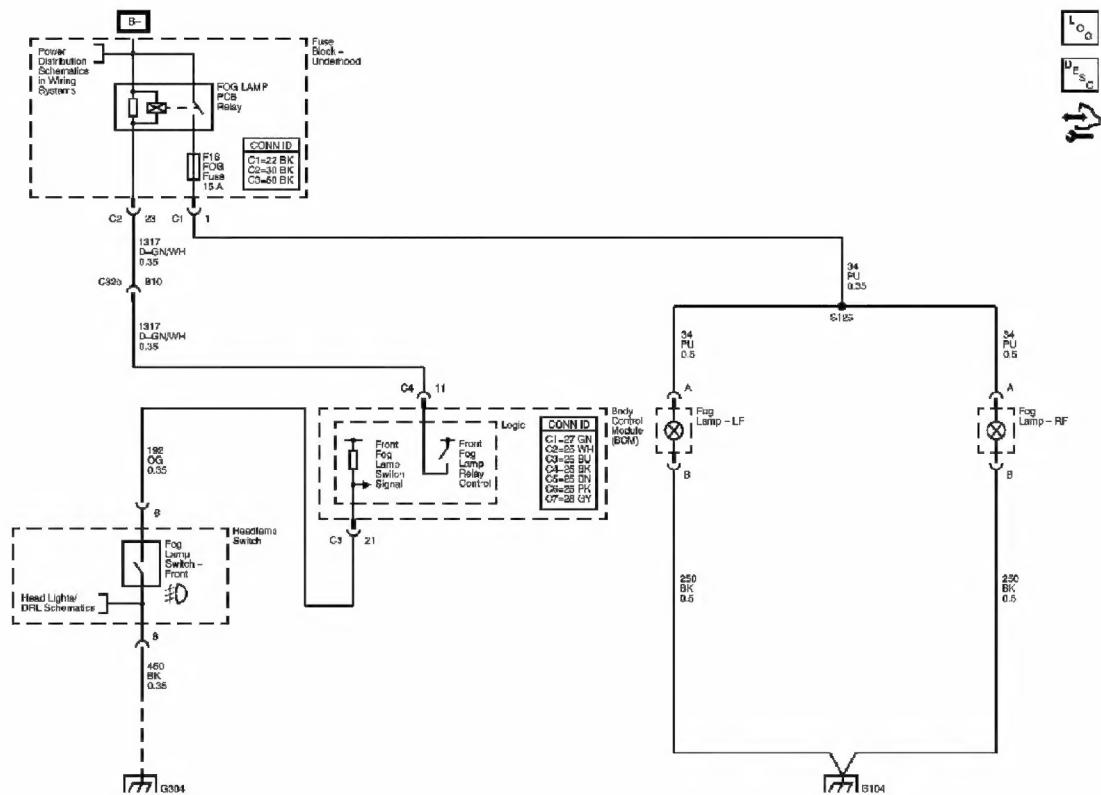


Fig. 3: Fog Lights Schematic

Courtesy of GENERAL MOTORS CORP.

EXTERIOR LIGHTS SCHEMATICS

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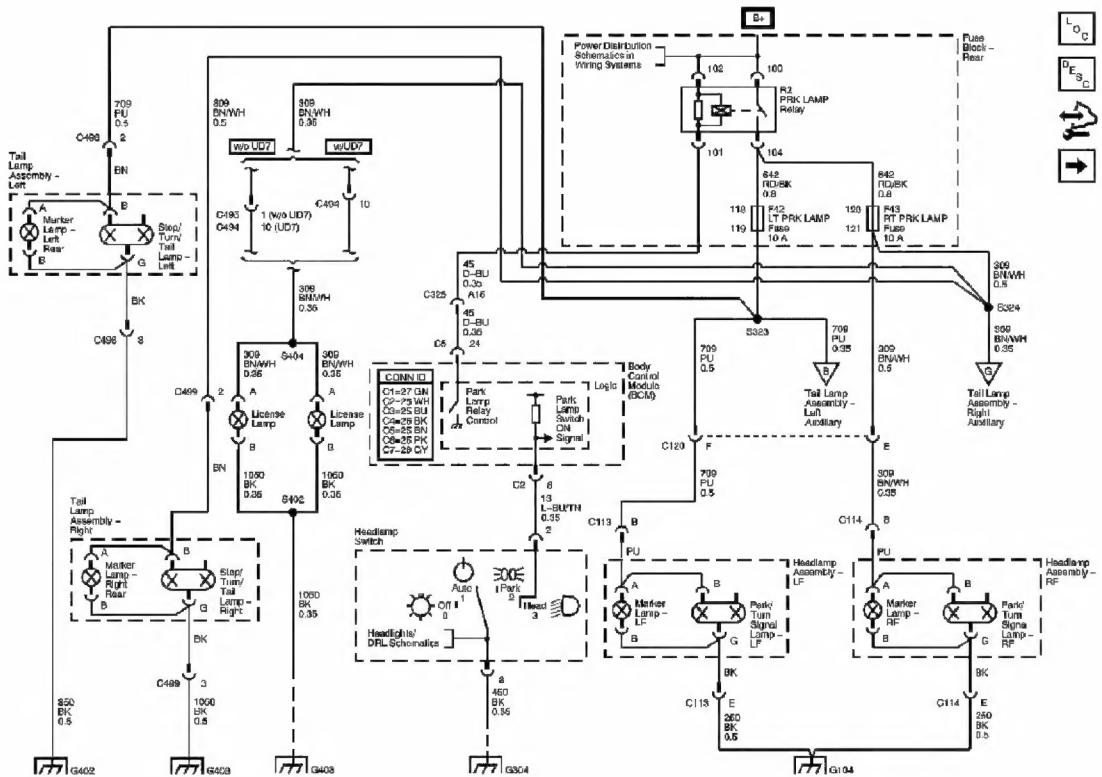
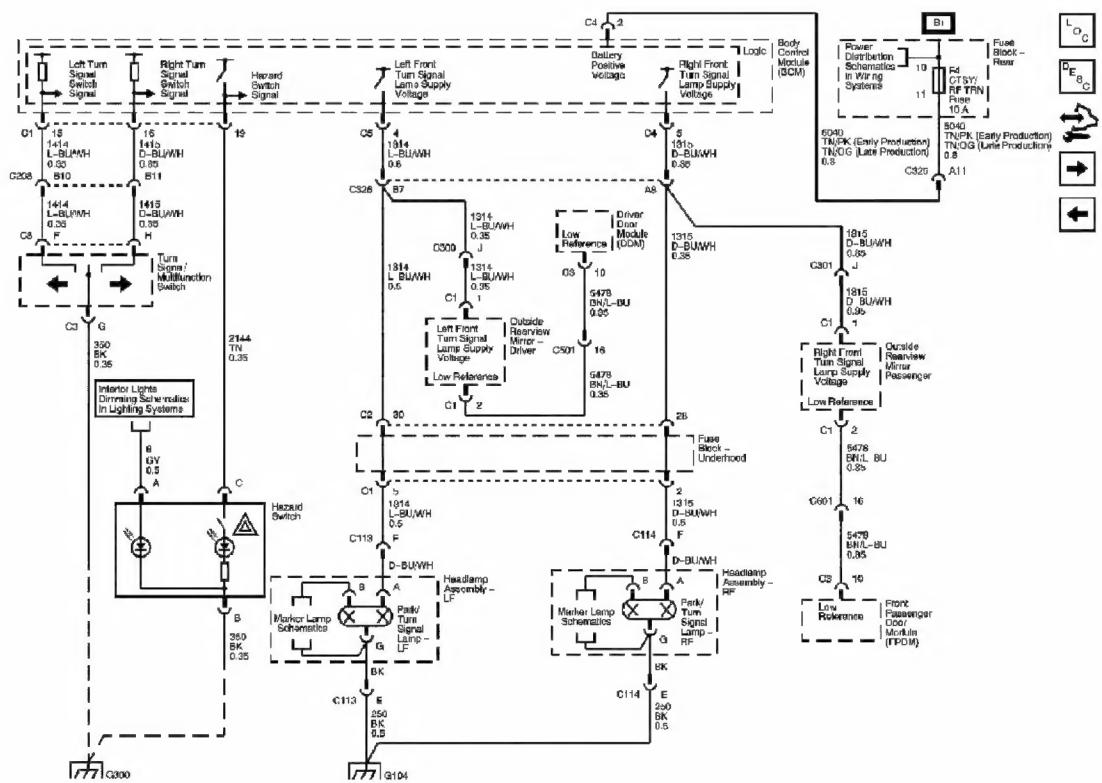


Fig. 4: Front Park & Marker Lamps Schematic
Courtesy of GENERAL MOTORS CORP.



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Fig. 5: Front Turn Signal/Hazard Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

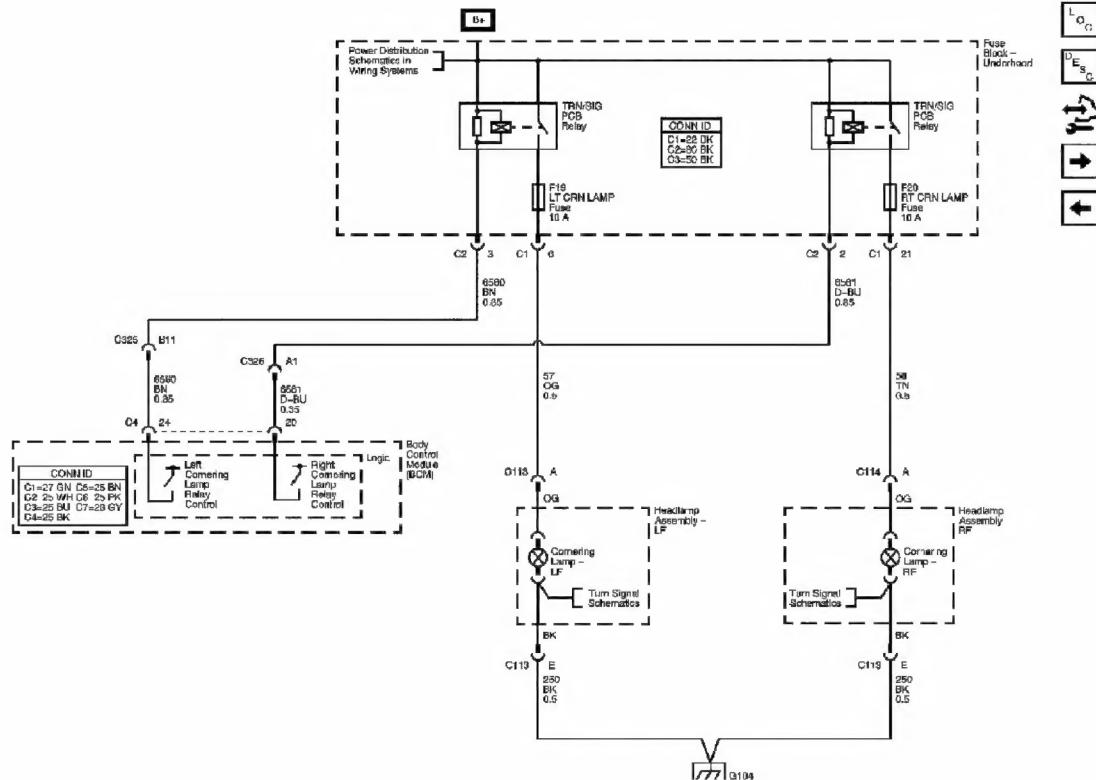


Fig. 6: Cornering Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

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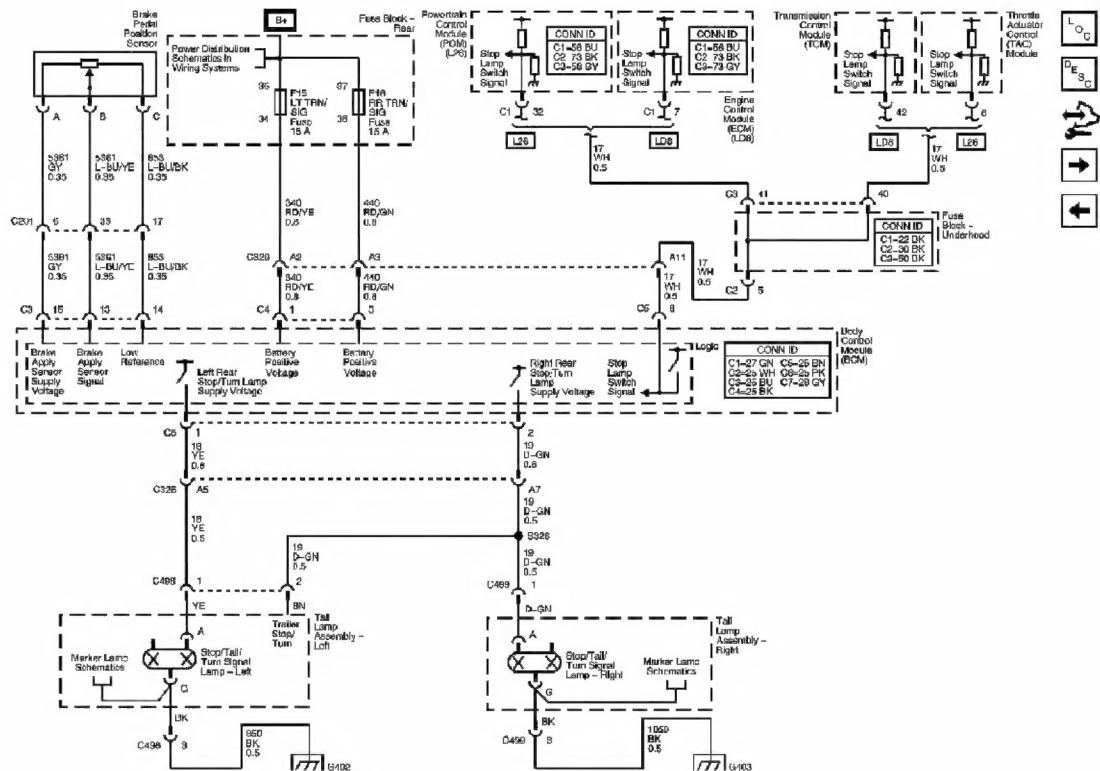
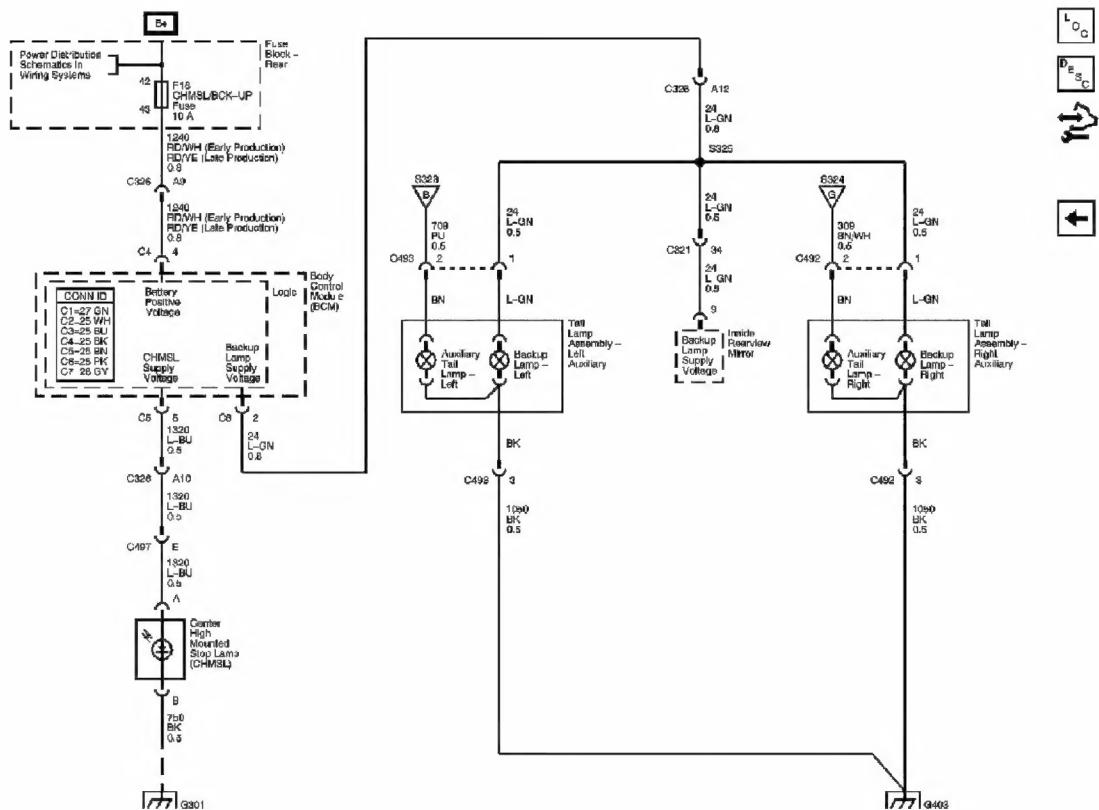


Fig. 7: Stop/Rear Turn Signal Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

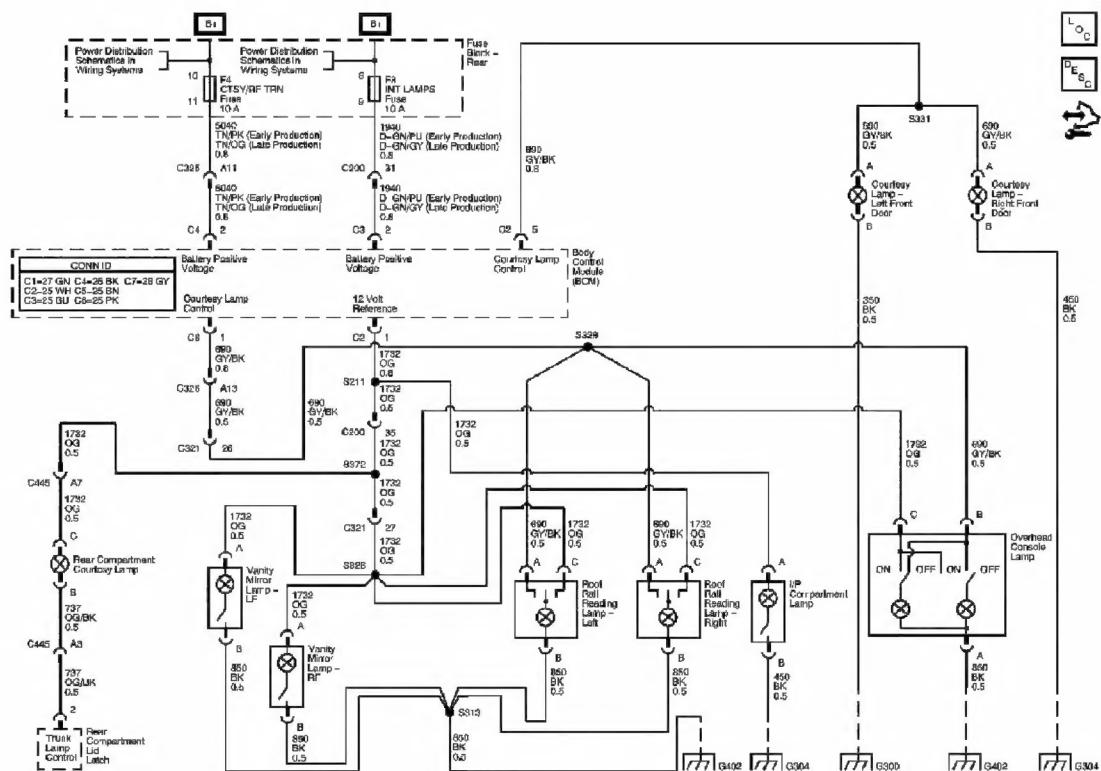
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Courtesy of GENERAL MOTORS CORP.

INTERIOR LIGHTS DIMMING SCHEMATICS

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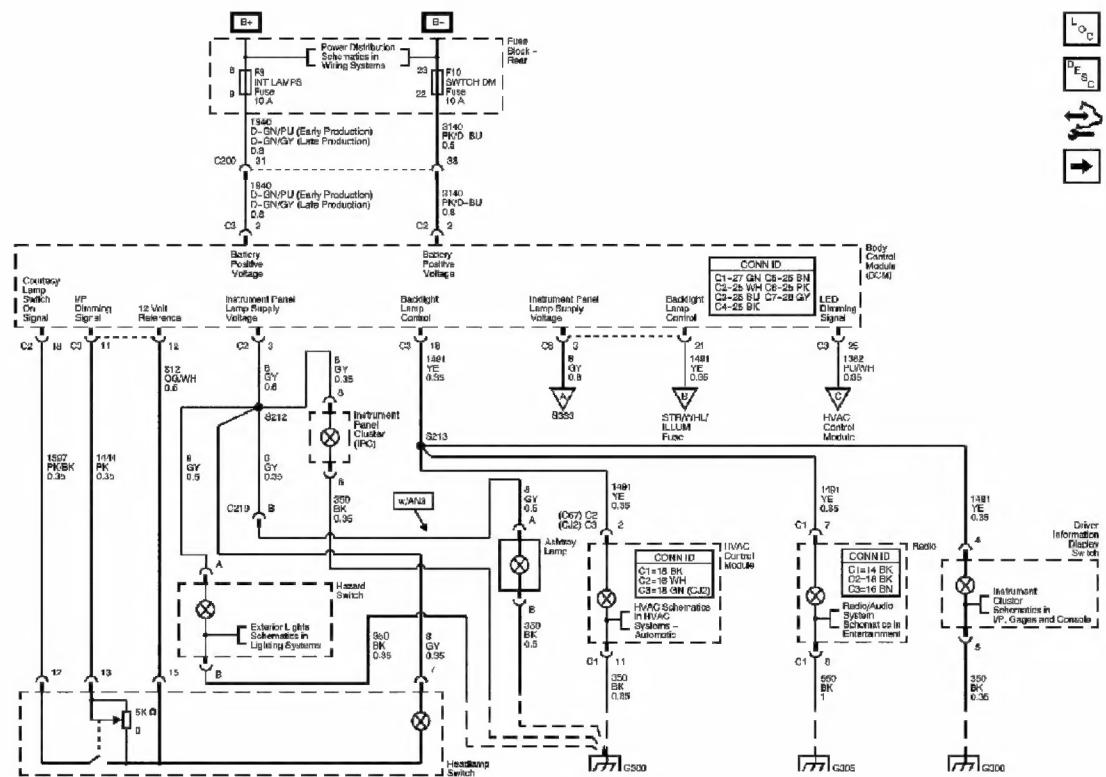
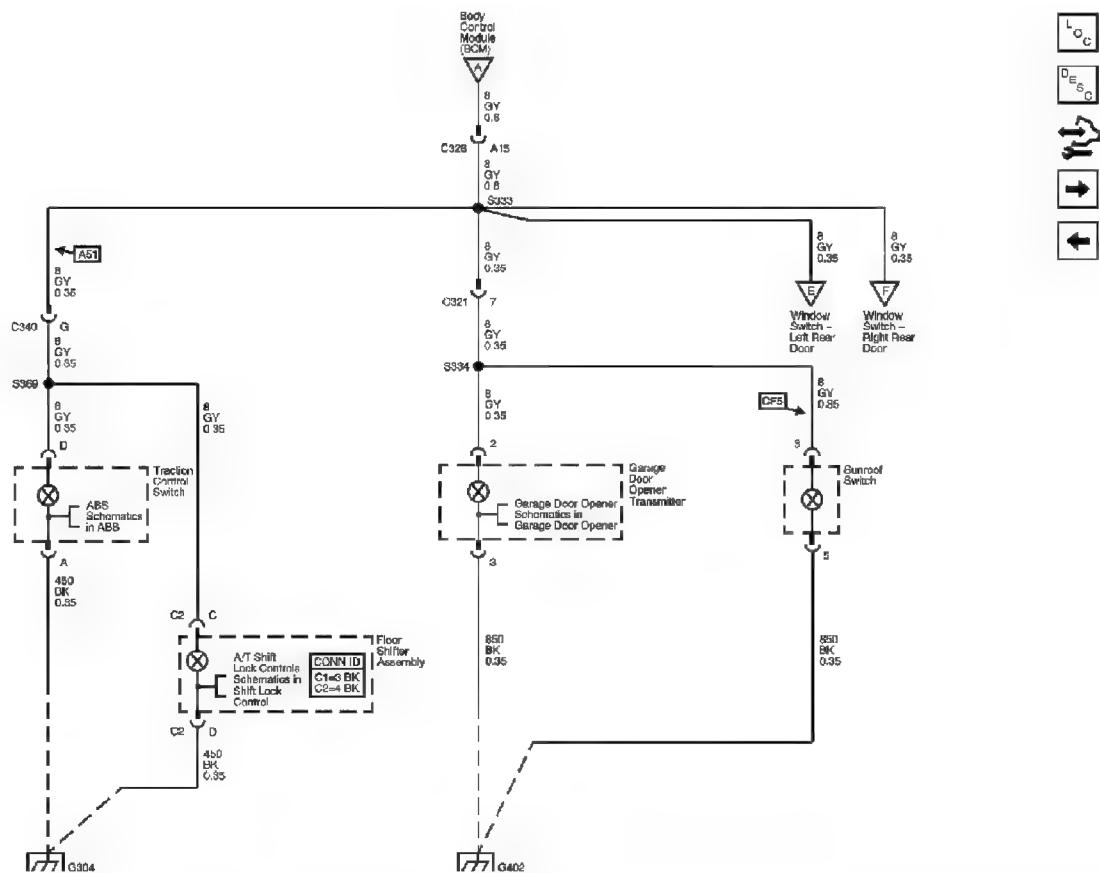


Fig. 10: Hazard, Headlamp, Driver Information Display Switches, Ashtray, HVAC Control Module & Radio Schematic
Courtesy of GENERAL MOTORS CORP.

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Courtesy of GENERAL MOTORS CORP.

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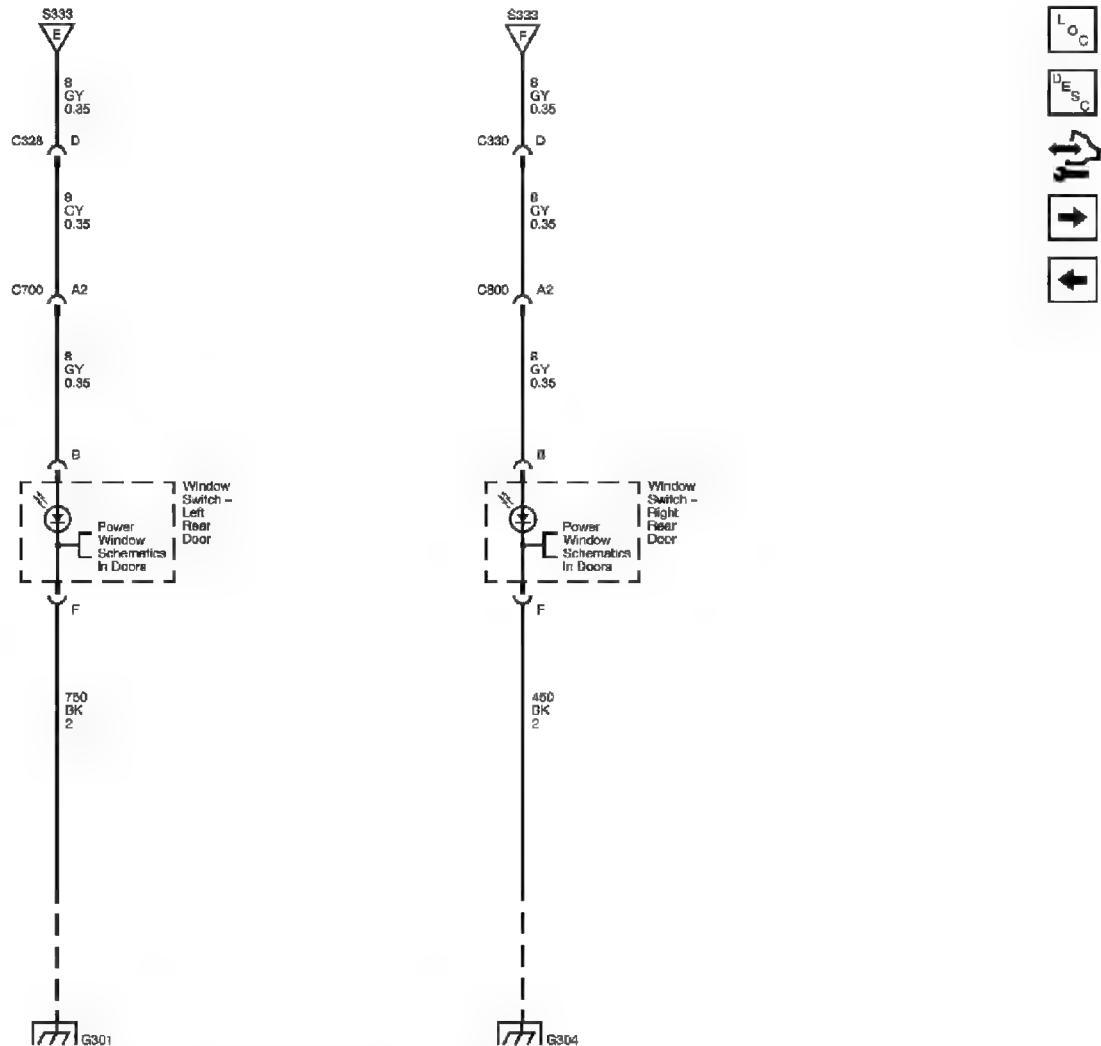


Fig. 12: Window Switches Schematic
Courtesy of GENERAL MOTORS CORP.

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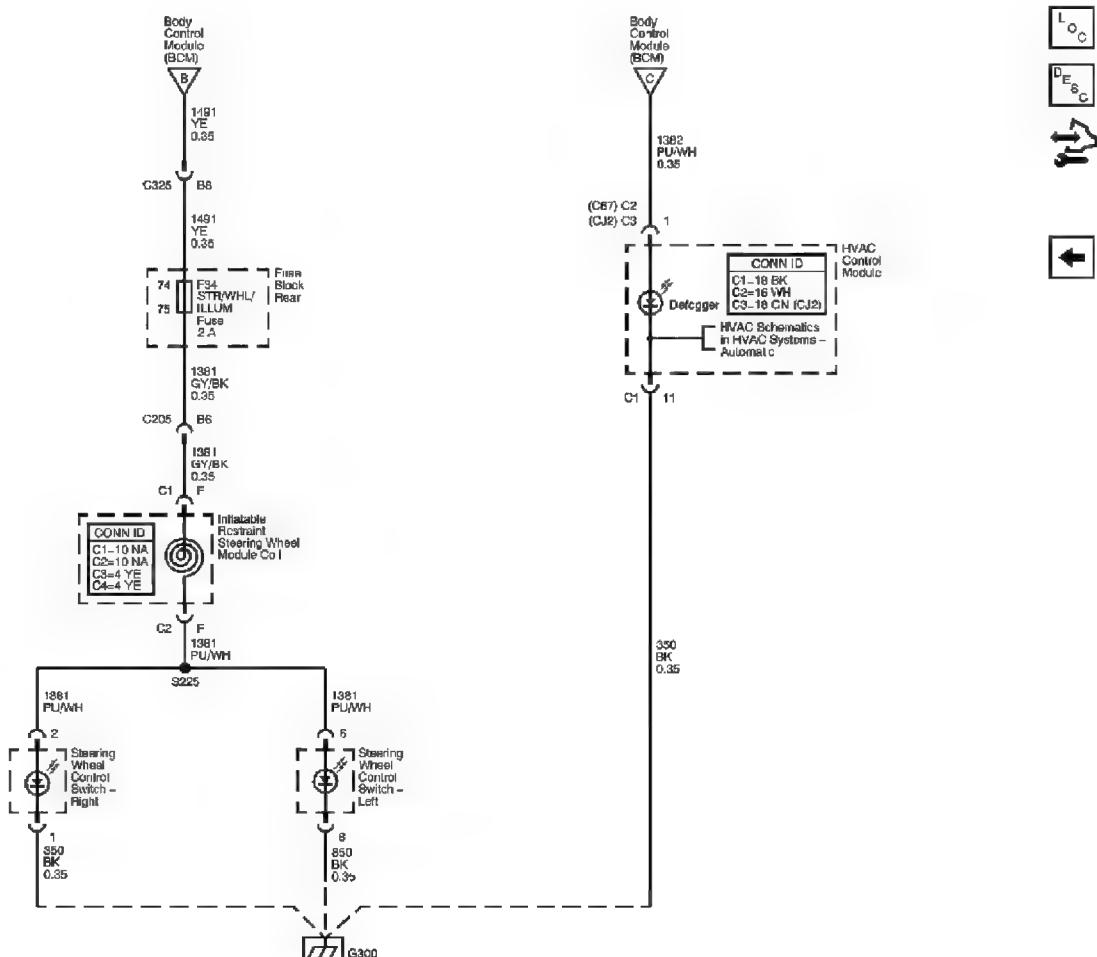


Fig. 13: HVAC Control Module & Steering Wheel Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

LIGHTING SYSTEMS COMPONENT VIEWS

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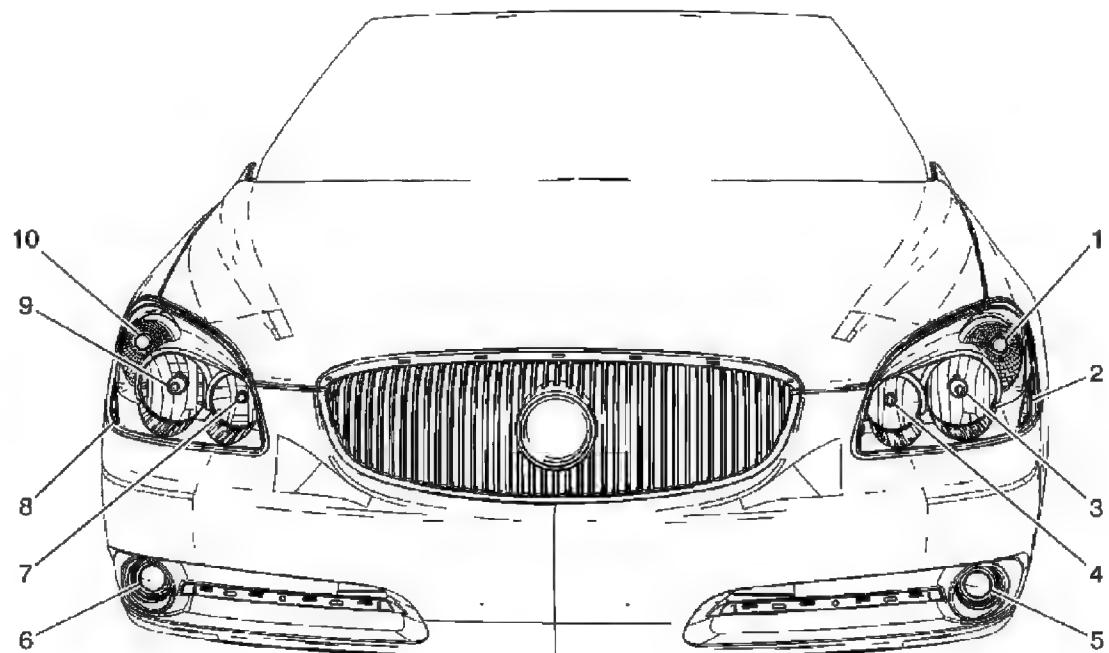


Fig. 14: View Of Front Of Vehicle
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 14

| Callout | Component Name |
|---------|------------------------------|
| 1 | Park/Turn Signal Lamp - LF |
| 2 | Marker Lamp - LF |
| 3 | Headlamp - High Beam - Left |
| 4 | Headlamp - Low Beam - Left |
| 5 | Fog Lamp - LF (T96) |
| 6 | Fog Lamp - RF (T96) |
| 7 | Headlamp - Low Beam - Right |
| 8 | Marker Lamp - RF |
| 9 | Headlamp - High Beam - Right |
| 10 | Park/Turn Signal Lamp - RF |

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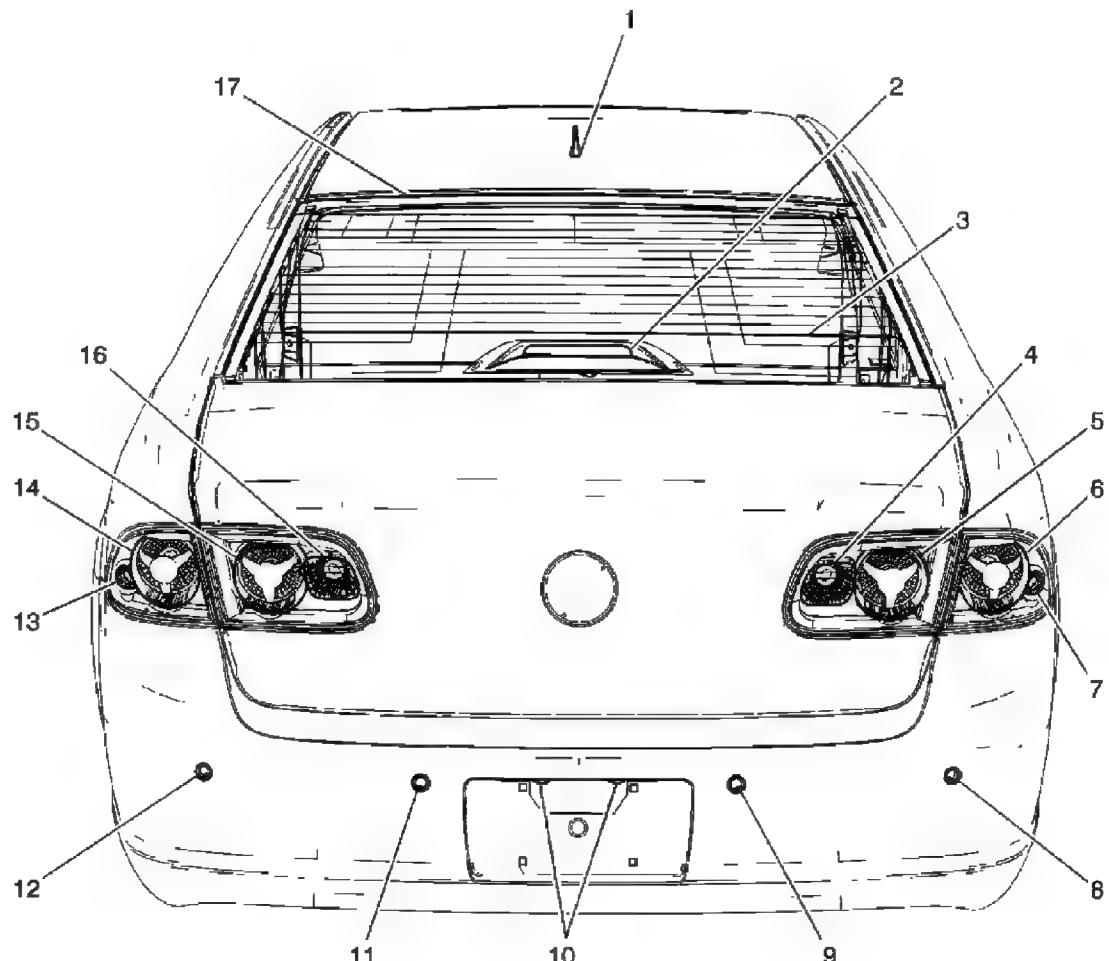


Fig. 15: View Of Rear Of Vehicle
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 15

| Callout | Component Name |
|---------|---|
| 1 | Cellular Navigation (UE1) and Digital Radio Antenna (U2K) |
| 2 | Center High Mounted Stop Lamp (CHMSL) |
| 3 | Rear Window Defogger |
| 4 | Backup Lamp - RR |
| 5 | Tail Lamp - Right Auxiliary |
| 6 | Stop/Turn Signal Lamp - RR |
| 7 | Marker Lamp - RR |
| 8 | Object Alarm Sensor - RR Corner (UFR) |
| 9 | Object Alarm Sensor - RR Middle (UFR) |
| 10 | License Lamps |
| 11 | Object Alarm Sensor - LR Middle (UFR) |
| 12 | Object Alarm Sensor - LR Corner (UFR) |
| 13 | Left Taillight Assembly |
| 14 | Right Taillight Assembly |
| 15 | Left Turn Signal Lamp |
| 16 | Right Turn Signal Lamp |
| 17 | Sunroof |

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| Callout | Marker Lamp - LR | Component Name |
|---------|------------------------------------|-----------------------------|
| 14 | Steering Column (E-L) | Digital Radio Antenna (U2K) |
| 15 | Front High Mount Stop Lamp (CHMSL) | |
| 16 | Backup Window Defogger | |
| 17 | Rear Lamp Assembly | Antenna |

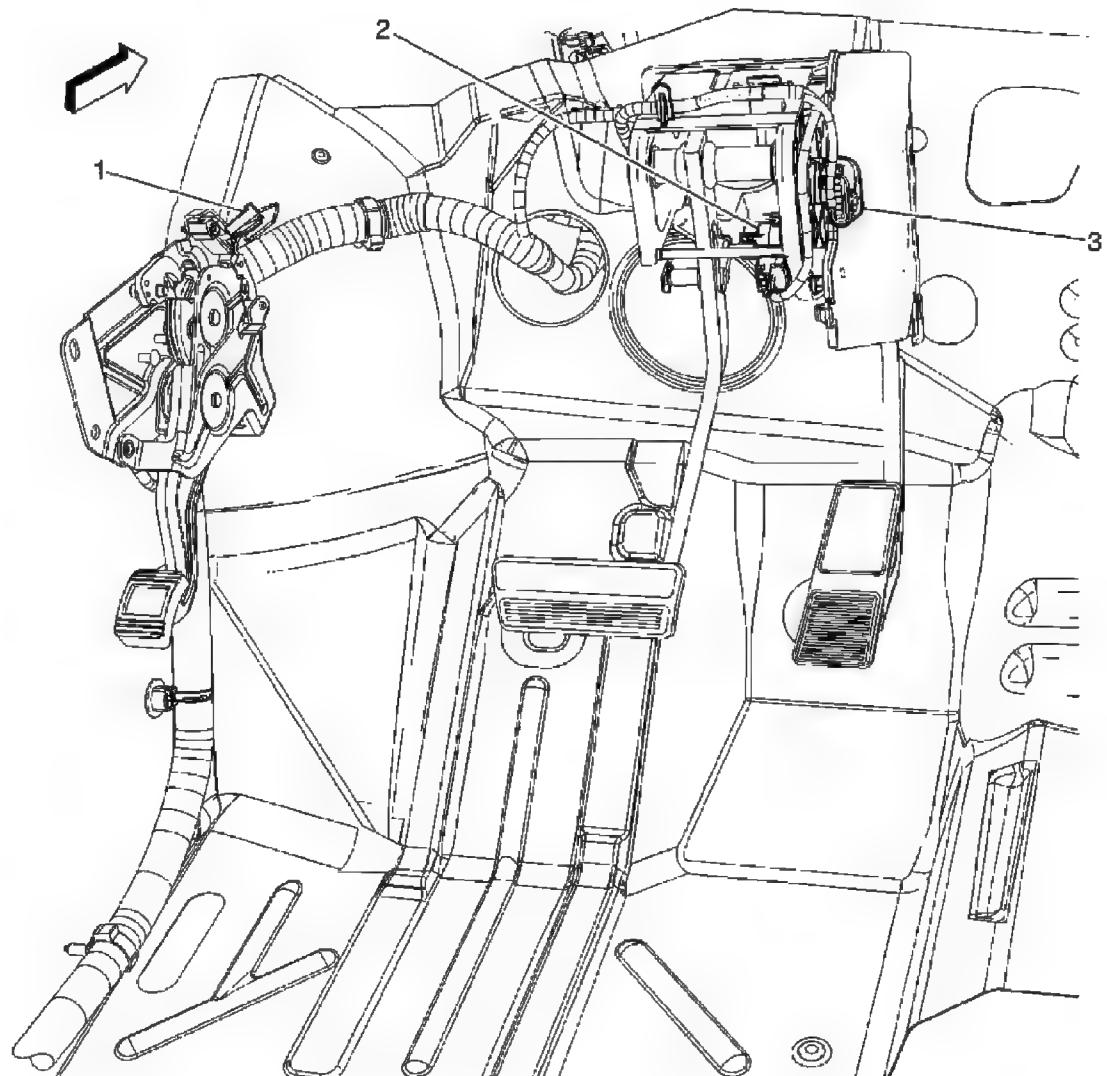


Fig. 16: View Of Lower Left Side Of I/P
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 16

| Callout | Component Name |
|---------|---|
| 1 | Park Brake Switch |
| 2 | Brake Pedal Position Sensor |
| 3 | Accelerator Pedal Position (APP) Sensor |

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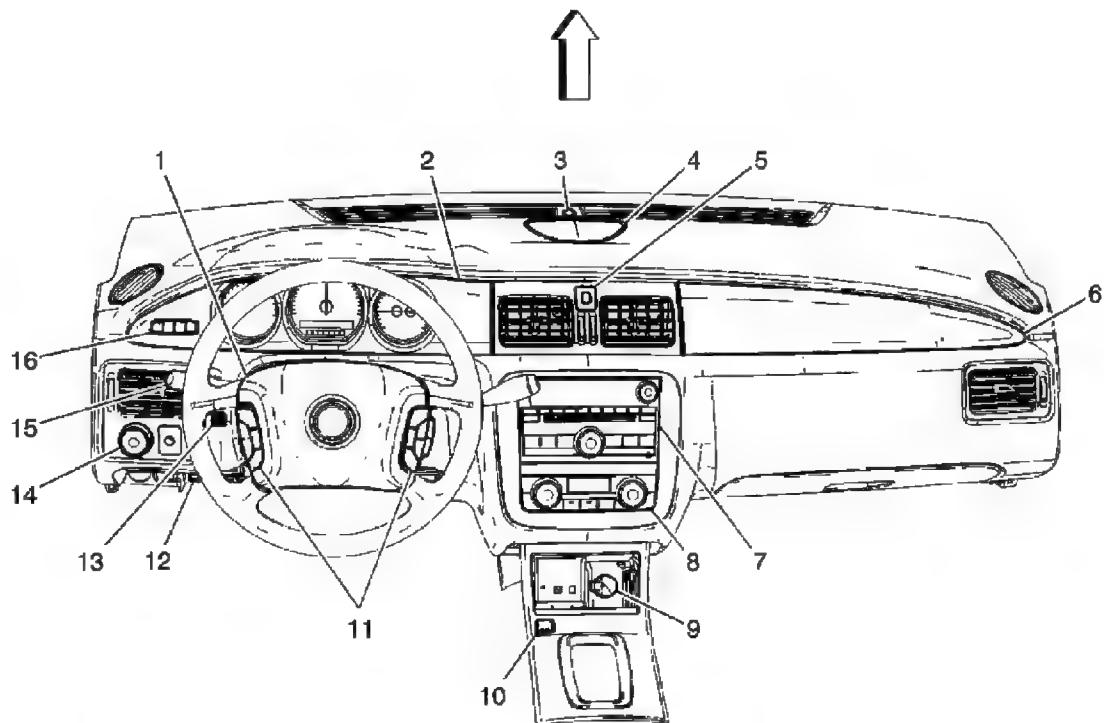


Fig. 17: View Of Instrument Panel (I/P) Components

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 17

| Callout | Component Name |
|---------|--|
| 1 | Inflatable Restraint Steering Wheel Module |
| 2 | Instrument Panel Cluster (IPC) |
| 3 | Sunload Twilight Sensor |
| 4 | Speaker - Front Center (UQA) |
| 5 | Hazard Switch |
| 6 | Inflatable Restraint I/P Module |
| 7 | Radio |
| 8 | HVAC Control Module |
| 9 | Auxiliary Power Outlet - Console (A51)/Cigar Lighter (DT4 w/A51) |
| 10 | Traction Control Switch |
| 11 | Steering Wheel Controls |
| 12 | Data Link Connector (DLC) |
| 13 | Air Temperature Sensor - Inside (CJ2) |
| 14 | Headlamp Switch |
| 15 | Turn Signal/Multifunction Switch |
| 16 | Driver Information Display Switch |

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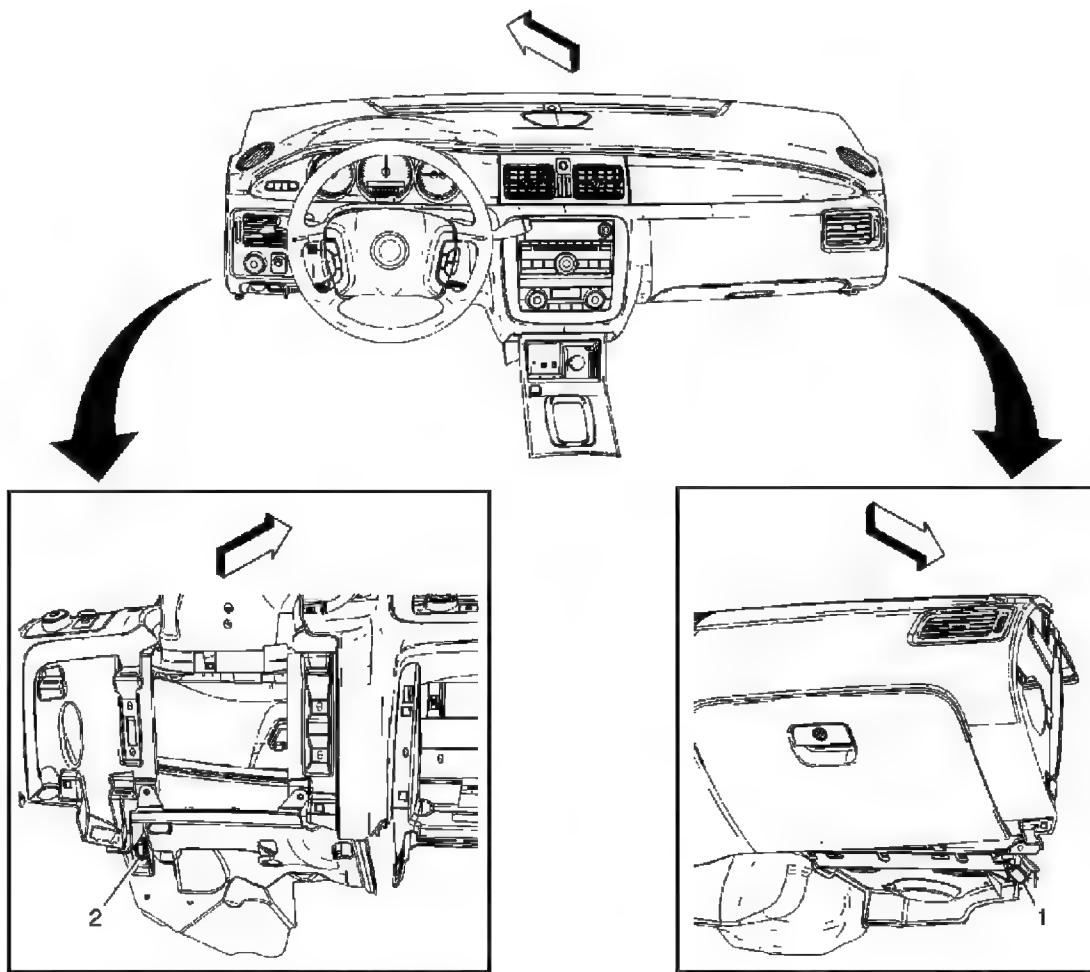


Fig. 18: View Of Footwell Courtesy Lamps
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 18

| Callout | Component Name |
|---------|--------------------------------|
| 1 | Courtesy Lamp - Right Footwell |
| 2 | Courtesy Lamp - Left Footwell |

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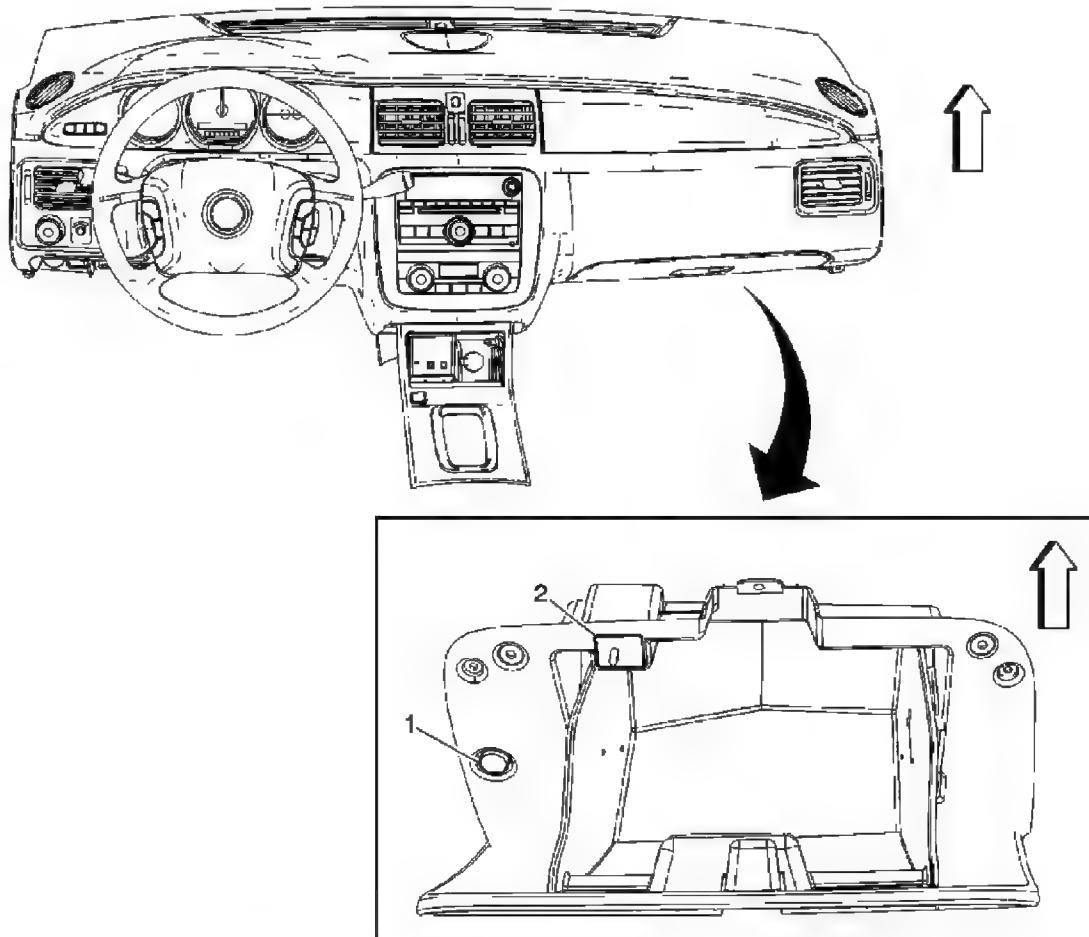


Fig. 19: View Of I/P Compartment Components

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 19

| Callout | Component Name |
|---------|-------------------------------------|
| 1 | Rear Compartment Lid Release Switch |
| 2 | I/P Compartment Lamp |

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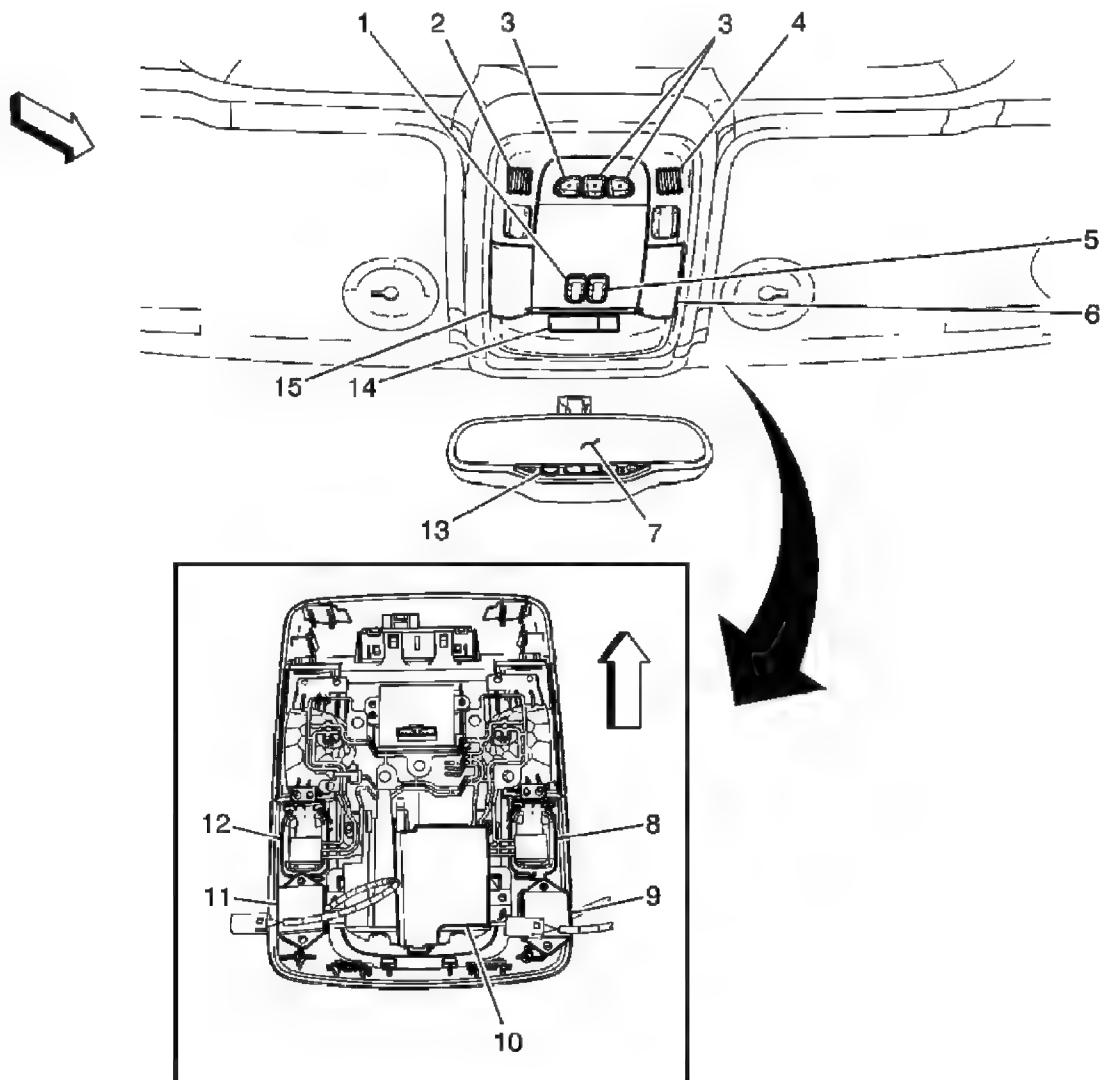


Fig. 20: View Of Overhead Console & Inside Rearview Mirror Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 20

| Callout | Component Name |
|---------|--|
| 1 | Sunroof Switch - Open/Close (CF5) |
| 2 | Cellular Microphone (UE1, U3U) |
| 3 | Garage Door Opener Buttons (UG1) |
| 4 | Cellular Microphone (UE1, U3U) |
| 5 | Sunroof Switch - Vent (CF5) |
| 6 | Courtesy Lamp - Overhead Console - Right |
| 7 | Inside Rearview Mirror |
| 8 | Courtesy Lamp Switch - Right |
| 9 | Cellular Microphone (UE1, U3U) |

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| Callout | Component Name |
|---------|--|
| 11 | Cylinder Microphone (E103UF5) |
| 12 | Callaway Mirror Shutter (UE1efU3U) |
| 13 | On Stage Button Open and Buttons (UG1) |
| 14 | Infrared Microphone Module & Indicator |
| 15 | Courtesy Lamp Overhead Console - Left |

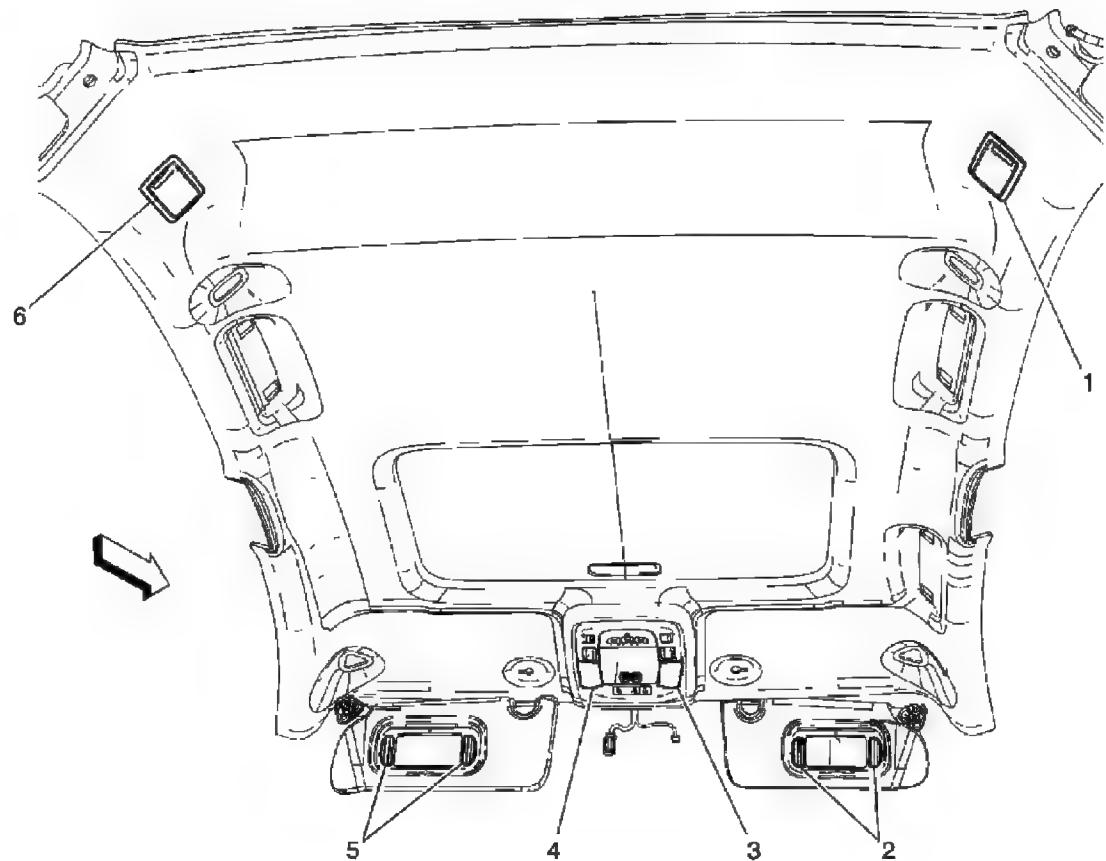


Fig. 21: View Of Headliner Lighting Components

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 21

| Callout | Component Name |
|---------|--|
| 1 | Courtesy Lamp - RR |
| 2 | Vanity Mirror Lamp - RF (DH6) |
| 3 | Courtesy Lamp Overhead Console - Right |
| 4 | Courtesy Lamp Overhead Console - Left |
| 5 | Vanity Mirror Lamp - LF (DH6) |
| 6 | Courtesy Lamp - LR |

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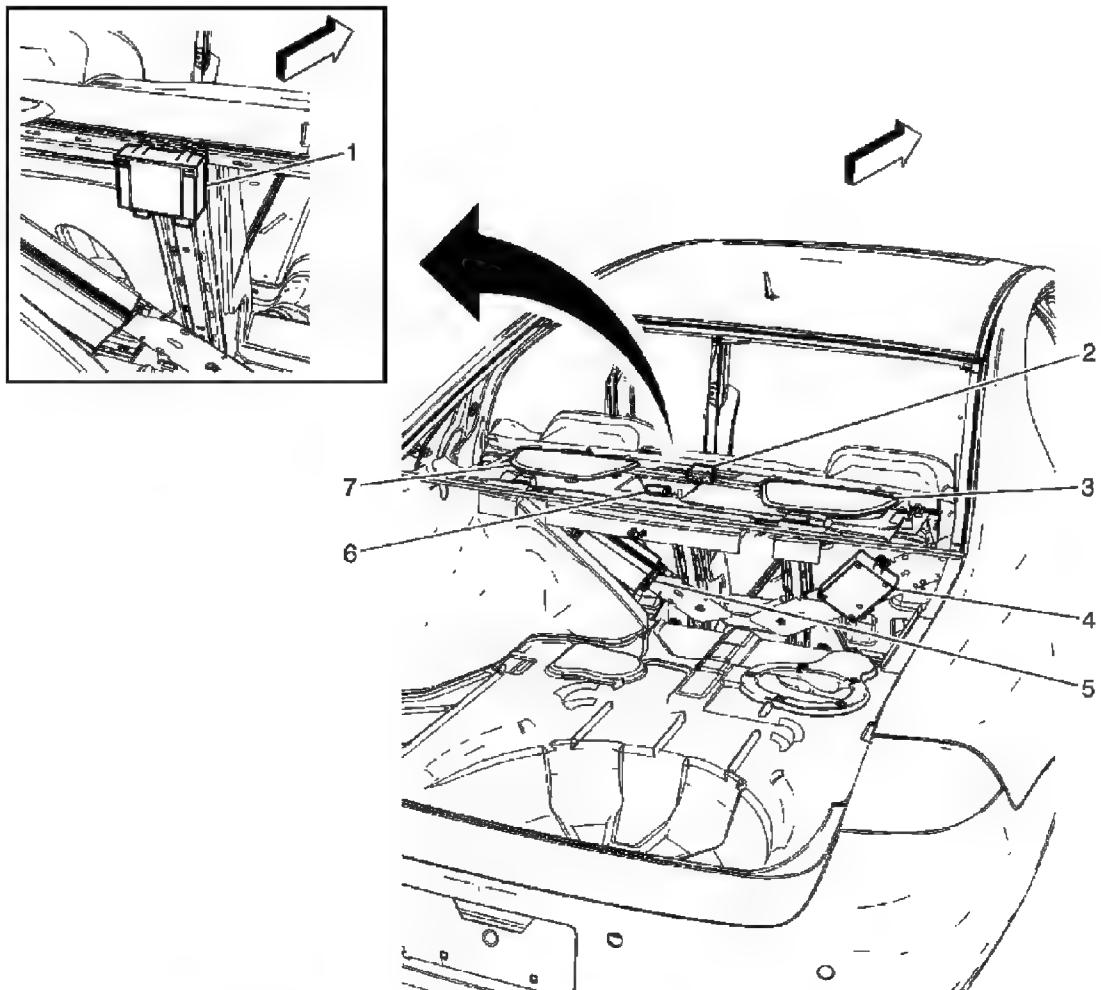


Fig. 22: View Behind Rear Seat

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 22

| Callout | Component Name |
|---------|---|
| 1 | Remote Control Door Lock Receiver (RCDLR) |
| 2 | Rear Park Assist Indicator (UD7) |
| 3 | Speaker - RR |
| 4 | Vehicle Communication Interface Module (VCIM) (UE1) |
| 5 | Amplifier (UQA) |
| 6 | Rear Compartment Courtesy Lamp |
| 7 | Speaker - LR |

LIGHTING SYSTEMS CONNECTOR END VIEWS

Ashtray Lamp

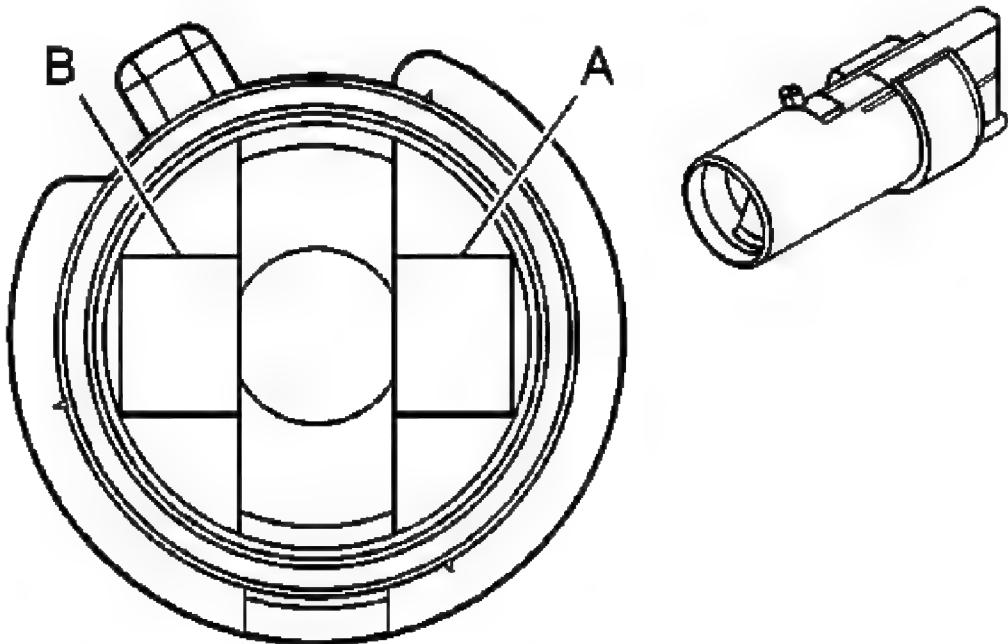


Fig. 23: Ashtray Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12124722
- Service: Service w/pigtail
- Description: 2-Way F Lamp Socket Wedge Base W2 (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Ashtray Lamp

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--------------------------------------|
| A | GY | 8 | Instrument Panel Lamp Supply Voltage |
| B | BK | 350 | Ground |

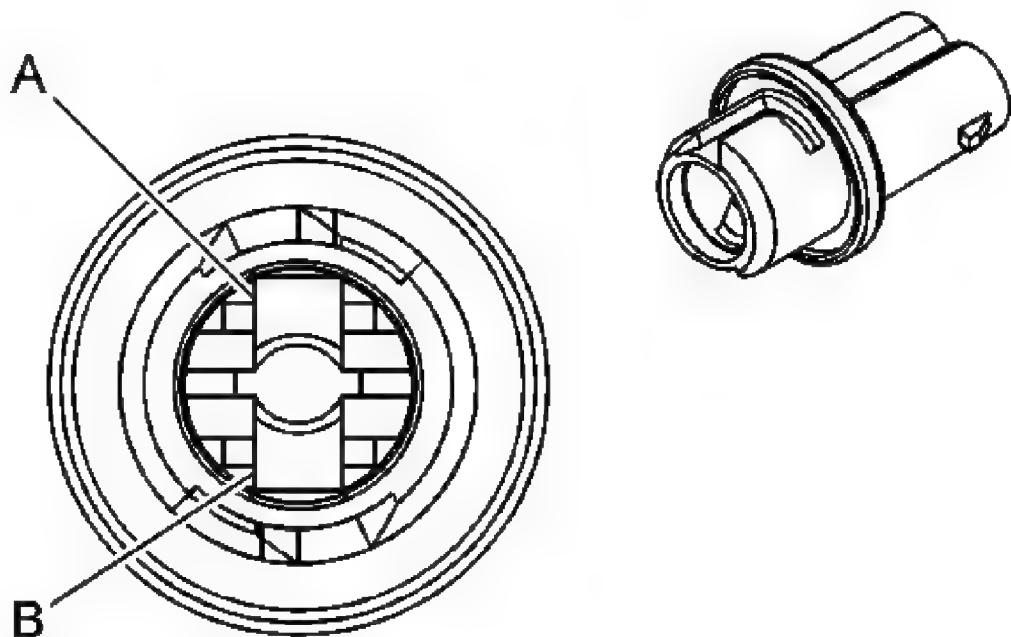
Auxiliary Tail Lamp - Left

Fig. 24: Left Auxiliary Tail Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 15317651
- Service: See Catalog
- Description: 2-Way F Socket Wedge Base W2 (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Auxiliary Tail Lamp - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---|
| A | BN | - | Left Auxiliary Tail Lamp Supply Voltage |

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B

BK

-

Ground

Auxiliary Tail Lamp - Right

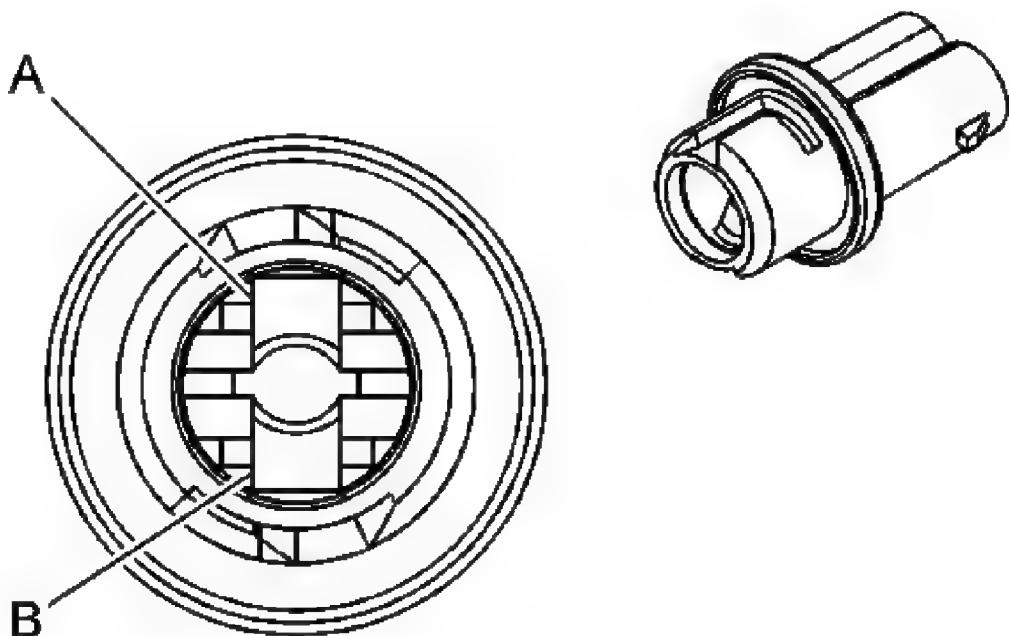


Fig. 25: Right Auxiliary Tail Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 15317651
- Service: See Catalog
- Description: 2-Way F Socket Wedge Base W2 (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Auxiliary Tail Lamp - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------|
|-----|------------|-------------|----------|

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| | | | |
|---|----|---|----------------------------------|
| A | BN | - | Right Auxiliary Tail Lamp Supply |
| B | BK | - | Voltage Ground |

Backup Lamp - Left

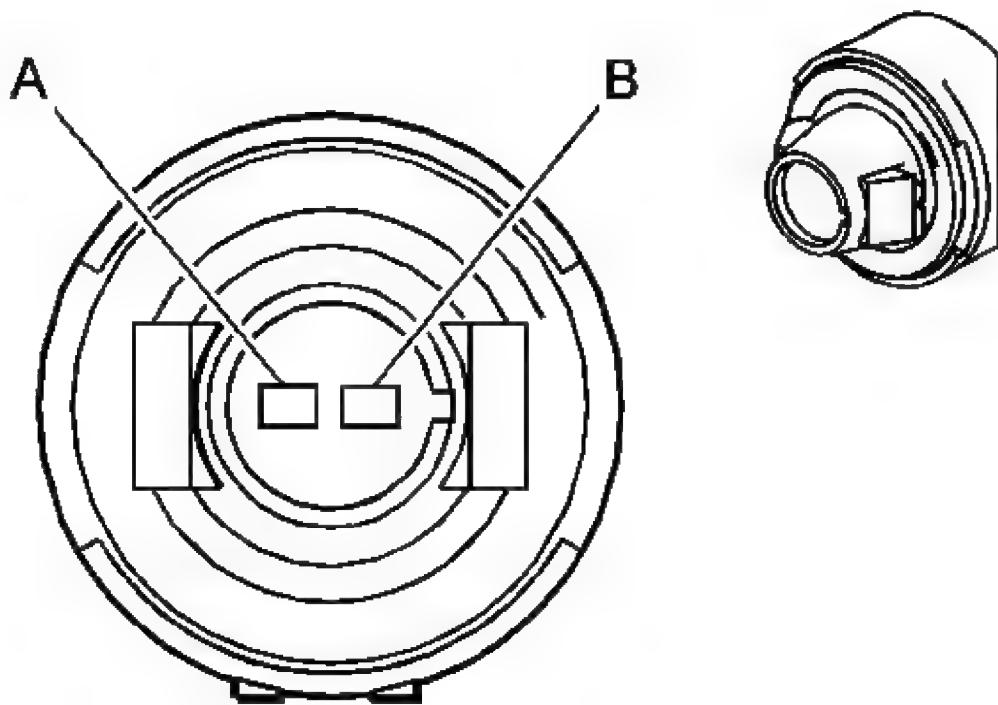


Fig. 26: Left Backup Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

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- Release Tool/Test Probe: See Terminal Repair Kit

Backup Lamp - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------|
| A | L-GN | - | Left Backup Lamp Supply Voltage |
| B | BK | - | Ground |
| | BK | - | Ground |

Backup Lamp - Right

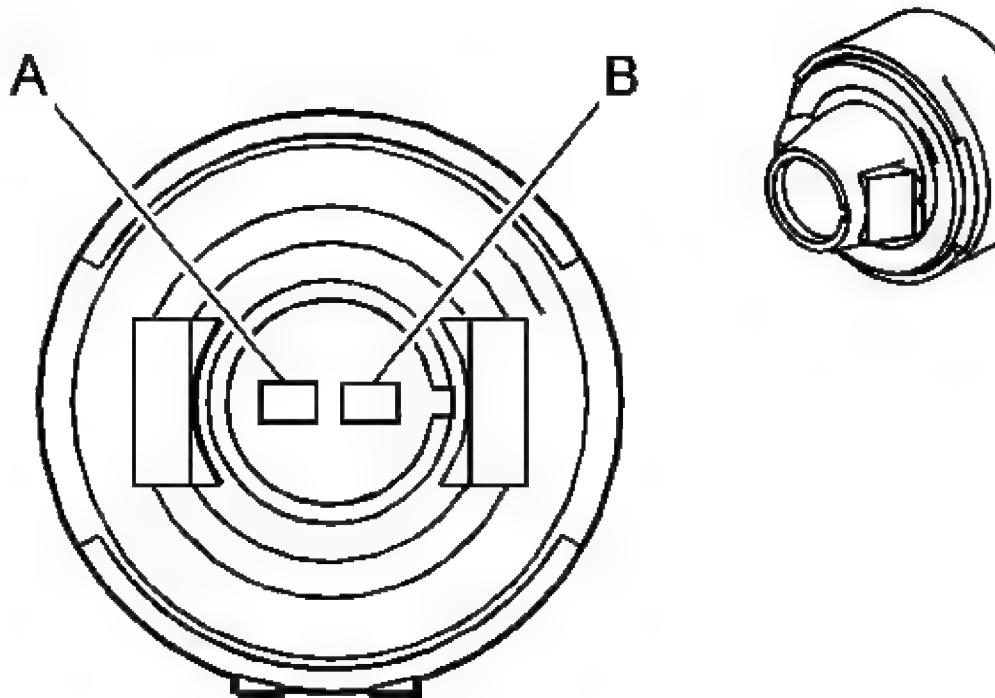


Fig. 27: Right Backup Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Backup Lamp - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------------------------------|
| A | L-GN | - | Right Backup Lamp Supply Voltage |
| B | BK | - | Ground |
| | BK | - | Ground |

Brake Pedal Position Sensor

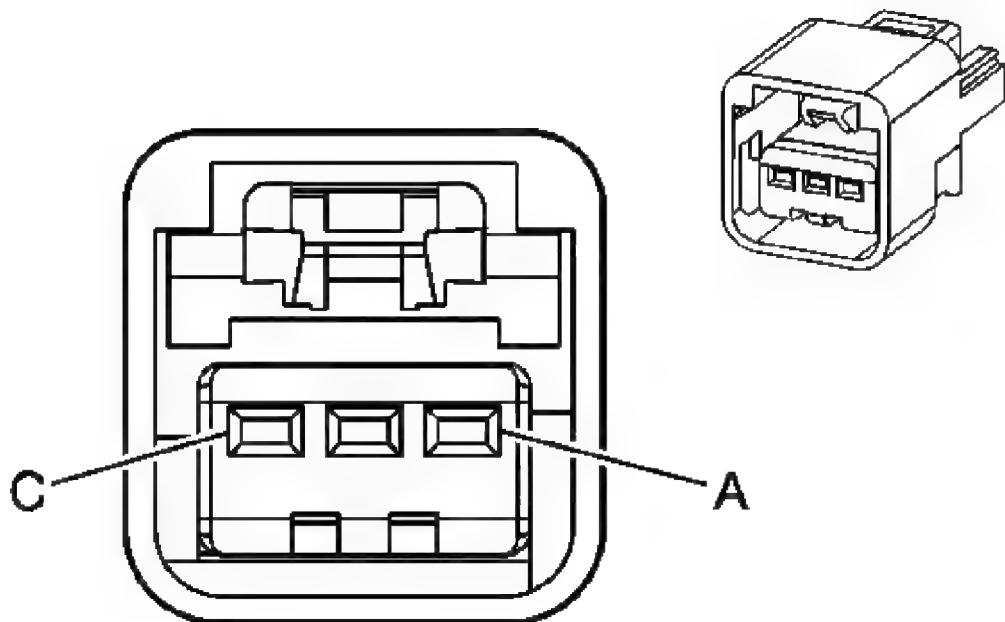


Fig. 28: Brake Pedal Position Sensor Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 15332132

- Service: 88953364
- Description: 3-Way F GT 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Brake Pedal Position Sensor

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------------------|
| A | GY | 5381 | Brake Apply Sensor Supply Voltage |
| B | L-BU/YE | 5361 | Brake Apply Sensor Signal |
| C | L-BU/BK | 853 | Low Reference |

Center High Mounted Stop Lamp (CHMSL)

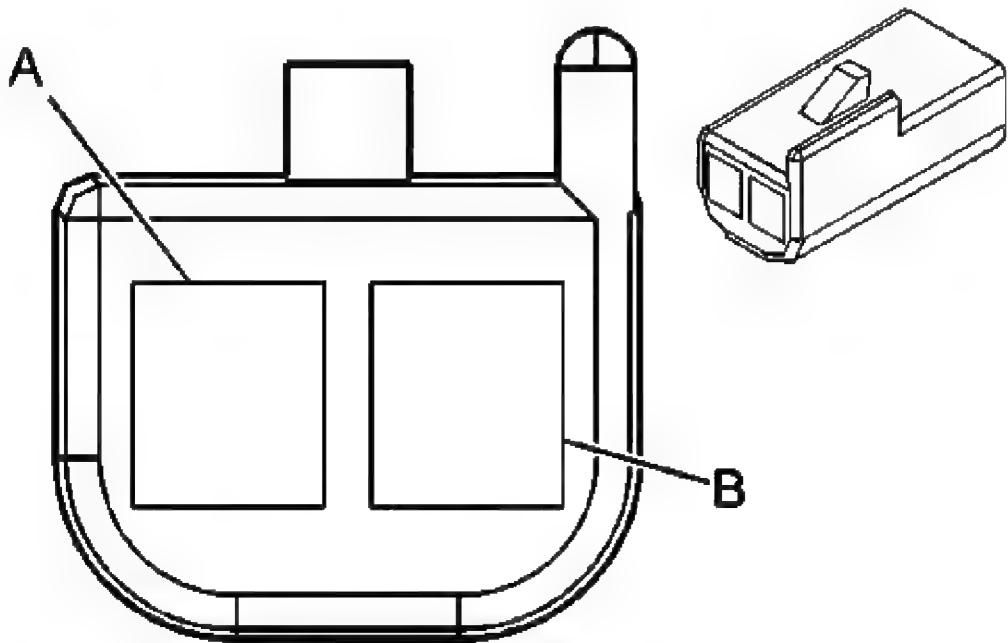


Fig. 29: Center High Mounted Stop Lamp (CHMSL) Connector End View
Courtesy of GENERAL MOTORS CORP.

Connector Part Information

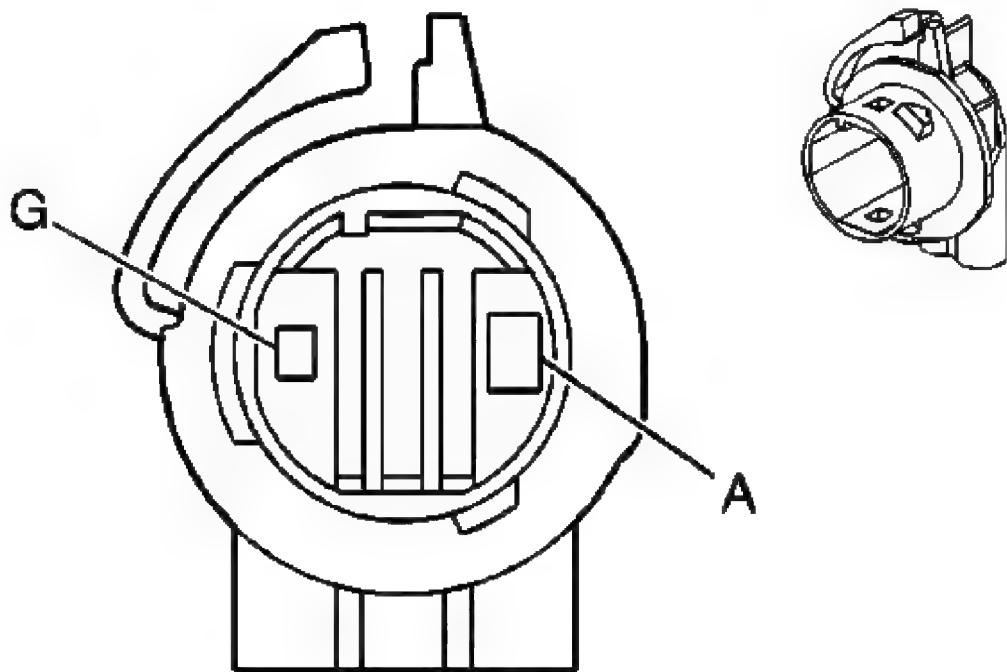
- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Center High Mounted Stop Lamp (CHMSL)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------------------|
| A | L-BU | 1320 | CHMSL Supply Voltage |
| B | BK | 750 | Ground |

Cornering Lamp - LF (TUH)**Fig. 30: Cornering Lamp - LF (TUH) Connector End View****Courtesy of GENERAL MOTORS CORP.**

Lighting Systems Connector End Views

Connector Part Information

- OEM: 15326291
- Service: 15306358
- Description: 2-Way F Lamp Socket Wedge (NA)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Cornering Lamp - LF (TUH)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|------------------------------------|
| A | OG | - | Left Cornering Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Cornering Lamp - RF (TUH)

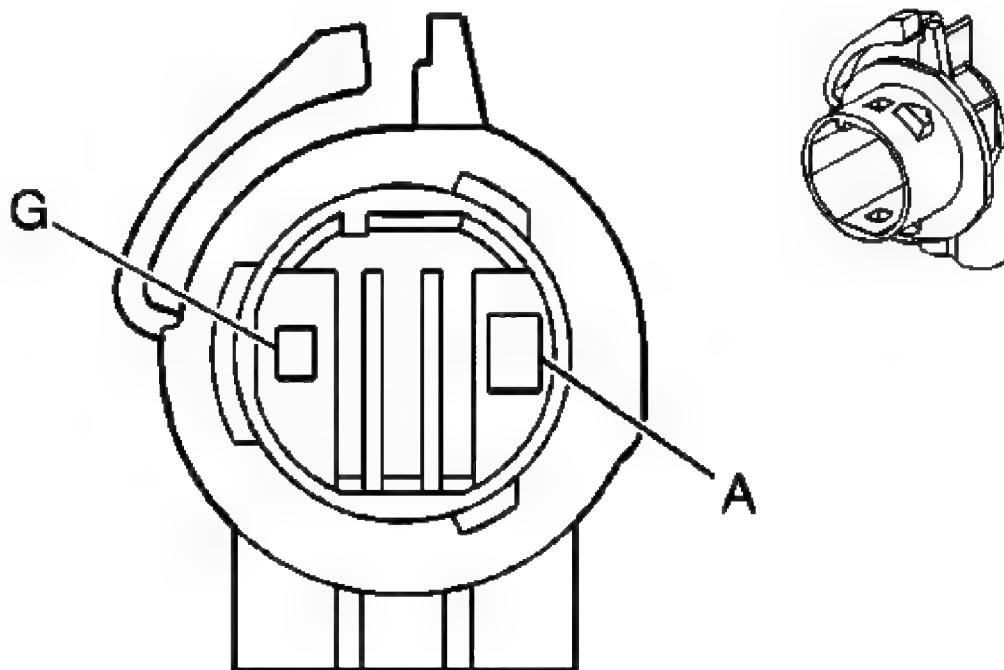


Fig. 31: Right Front Cornering Lamp (TUH) Connector End View
Courtesy of GENERAL MOTORS CORP.**Lighting Systems Connector End Views****Connector Part Information**

- OEM: 15326291
- Service: 15306358
- Description: 2-Way F Lamp Socket Wedge (NA)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Cornering Lamp - RF (TUH)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------------|
| A | TN | - | Right Cornering Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Courtesy Lamp - Left Front Door

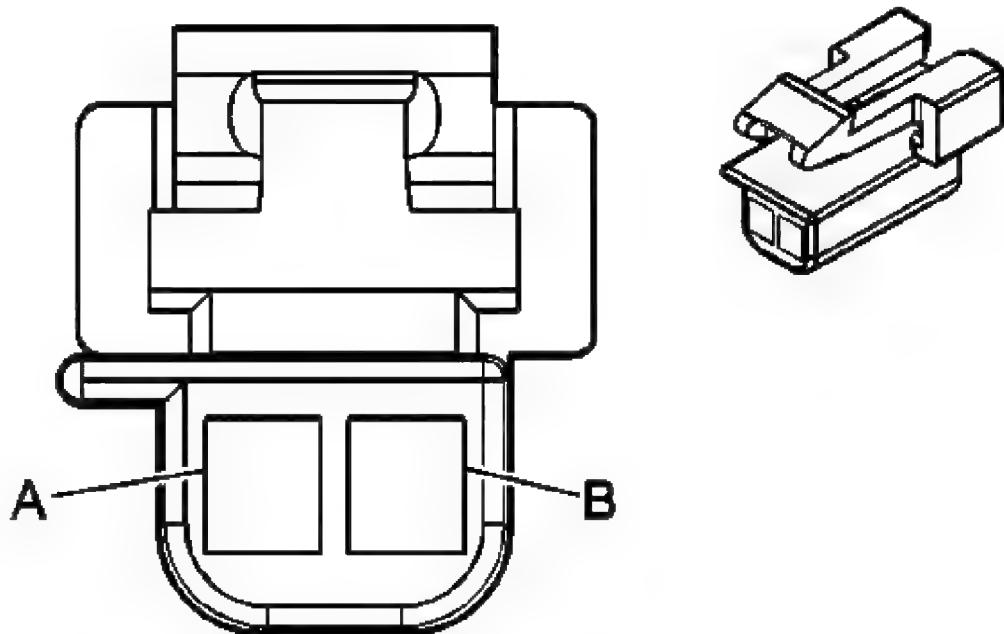


Fig. 32: Left Front Door Courtesy Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12064869
- Service: See Catalog
- Description: 2-Way F Metri-pack 150 Series (BU)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit.
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Courtesy Lamp - Left Front Door

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------|
| A | GY/BK | 690 | Courtesy Lamp Control |
| B | BK | 350 | Ground |

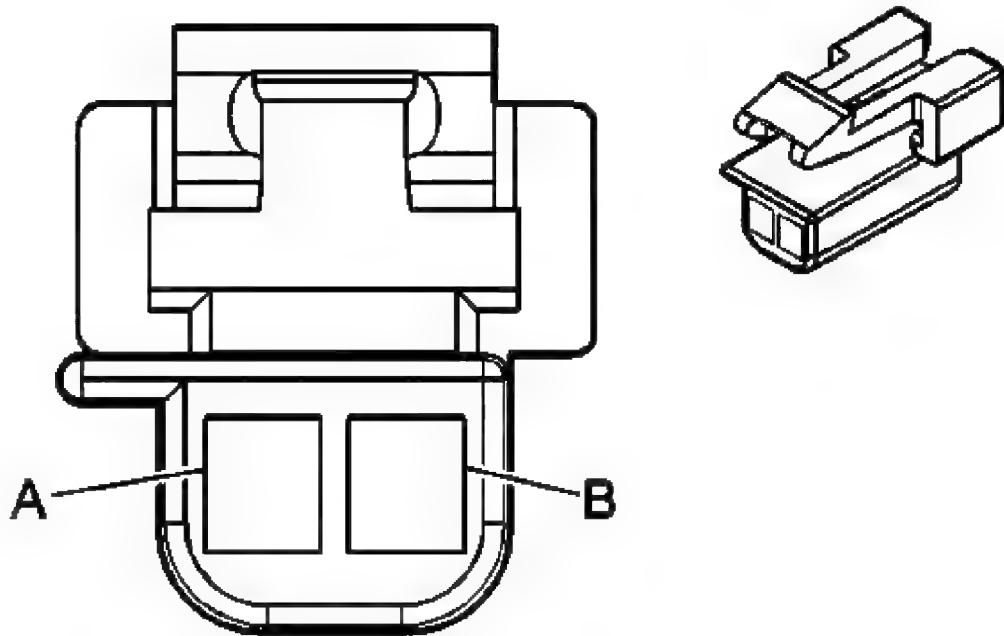
Courtesy Lamp - Right Front Door

Fig. 33: Right Front Door Courtesy Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 12064869
- Service: See Catalog
- Description: 2-Way F Metri-pack 150 Series (BU)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Courtesy Lamp - Right Front Door

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------|
| A | GY/BK | 690 | Courtesy Lamp Control |

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B

BK

350

Ground

Fog Lamp - LF (T96)

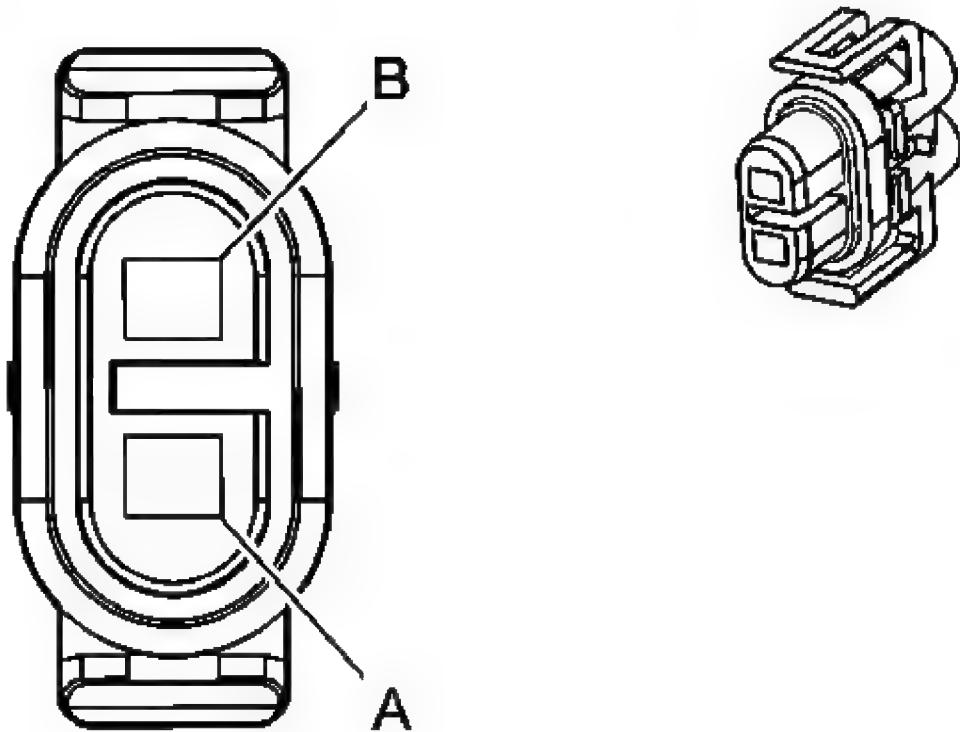


Fig. 34: Left Front Fog Lamp (T96) Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12124819
- Service: See Catalog
- Description: 2-Way F Metri-pack 280 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

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Fog Lamp - LF (T96)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------|
| A | PU | 34 | Front Fog Lamp Supply Voltage |
| B | BK | 250 | Ground |

Fog Lamp - RF (T96)

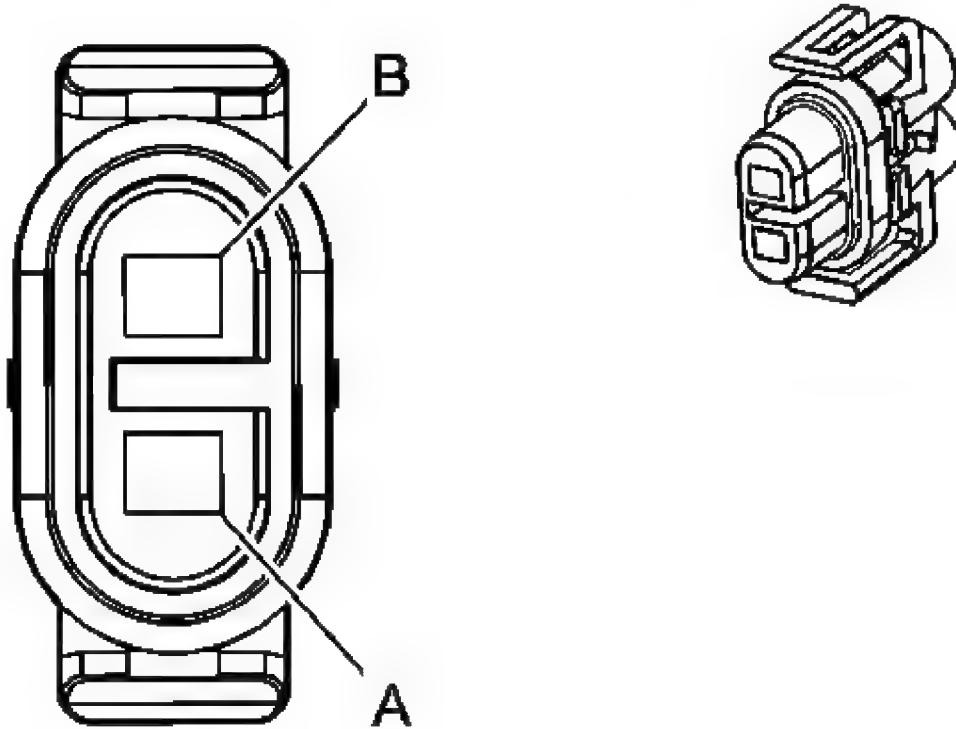


Fig. 35: Right Front Fog Lamp (T96) Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12124819
- Service: See Catalog
- Description: 2-Way F Metri-pack 280 Series (BK)

Terminal Part Information

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- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Fog Lamp - RF (T96)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------|
| A | PU | 34 | Front Fog Lamp Supply Voltage |
| B | BK | 250 | Ground |

Hazard Switch

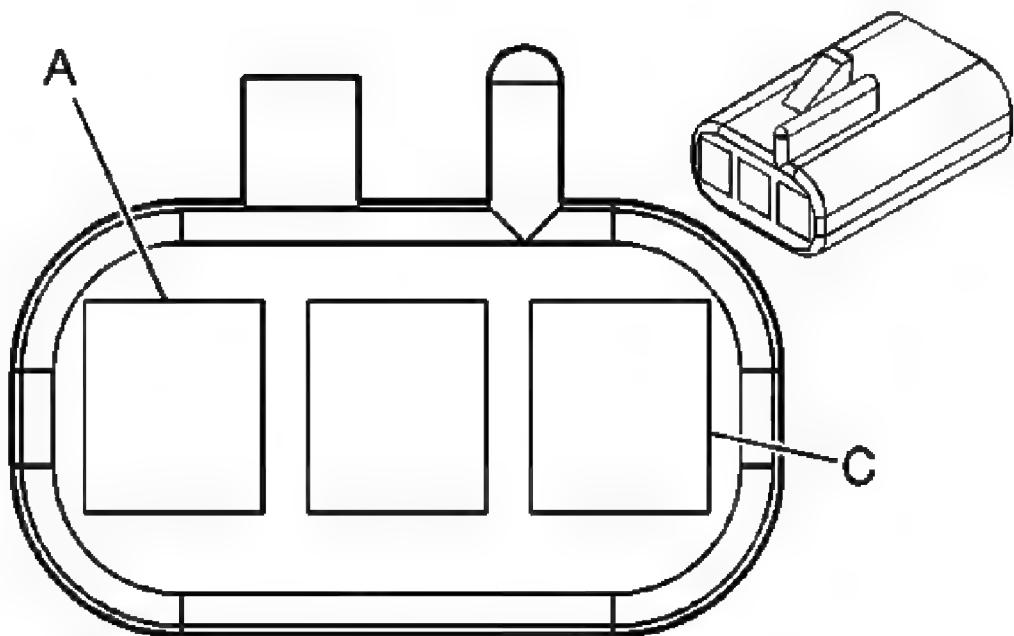


Fig. 36: Hazard Switch Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-pack 150 Series (BK)

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Terminal Part Information

- Pins: A
- Terminal/Tray: 12047767/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)
- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Hazard Switch

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--------------------------------------|
| A | GY | 8 | Instrument Panel Lamp Supply Voltage |
| B | BK | 350 | Ground |
| C | TN | 2144 | Hazard Switch Signal |

Headlamp High Beam - Left

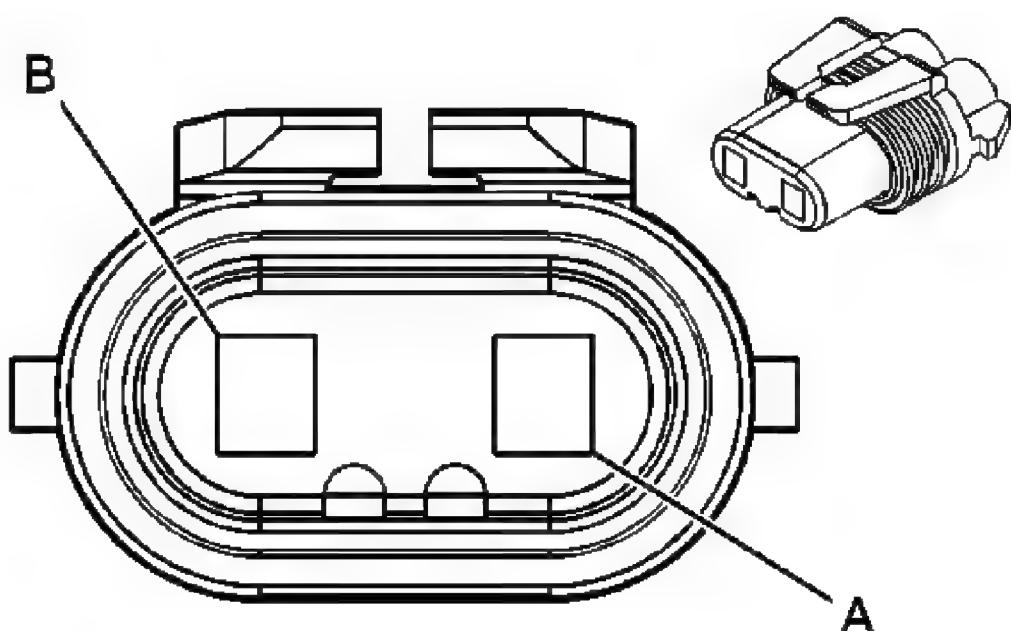


Fig. 37: Left Headlamp - High Beam Connector End View
Courtesy of GENERAL MOTORS CORP.**Lighting Systems Connector End Views****Connector Part Information**

- OEM: 12059183
- Service: 1210898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

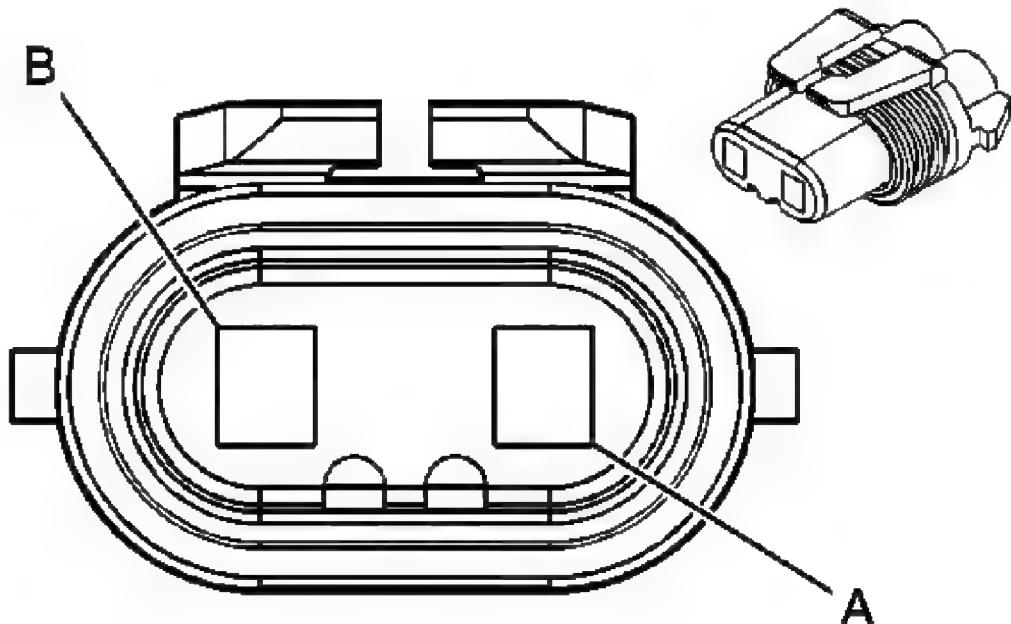
Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp High Beam - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--|
| A | D-GN/WH | - | Left Headlamp High Beam Supply Voltage |
| B | BK | - | Ground |

Headlamp High Beam - Right

**Fig. 38: Right Headlamp - High Beam Connector End View**

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

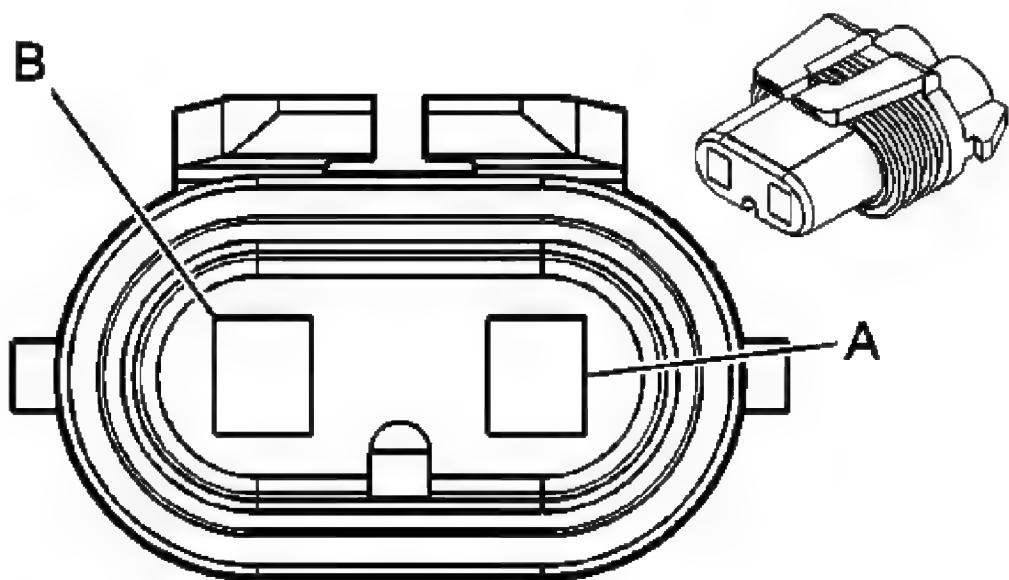
- OEM: 12059183
- Service: 1210898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - High Beam - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---|
| A | D-GN/WH | - | Right Headlamp High Beam Supply Voltage |
| B | BK | - | Ground |

Headlamp Low Beam - Left**Fig. 39: Left Low Beam Headlamp Connector End View**

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 12059181
- Service: 1210897
- Description: 2-Way F Metri-Pack 280 Series, Sealed (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Low Beam - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------------|
| A | YE | - | Left Headlamp Low Beam Supply Voltage |
| B | BK | - | Ground |

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BK

-

Ground

Headlamp Low Beam - Right

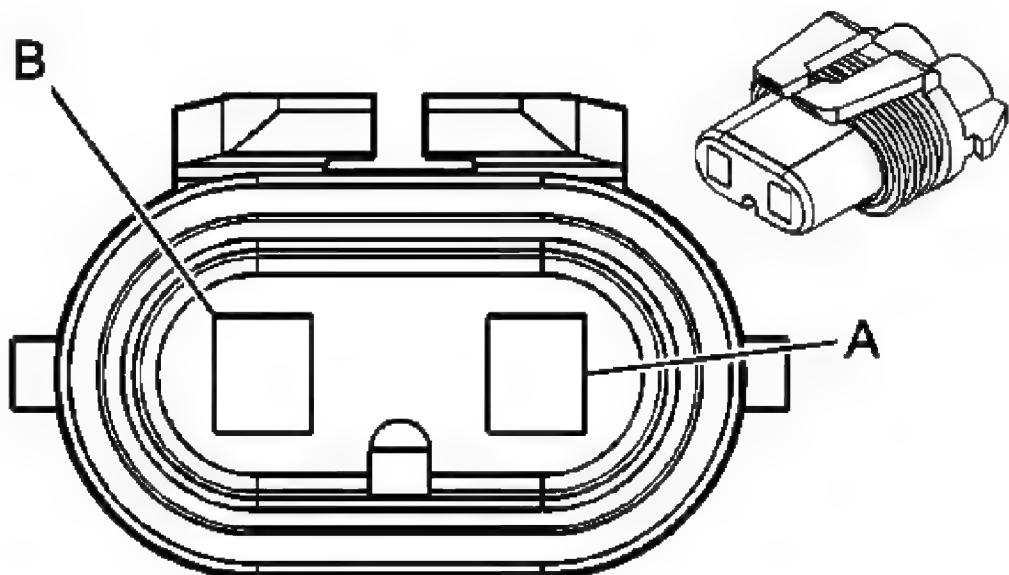


Fig. 40: Right Low Beam Headlamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12059181
- Service: 1210897
- Description: 2-Way F Metri-Pack 280 Series, Sealed (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Low Beam - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--------------------------------|
| A | YE | - | Right Headlamp Low Beam Supply |

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| | | | Voltage |
|---|----|---|---------|
| B | BK | - | Ground |
| | BK | - | Ground |

Headlamp Switch

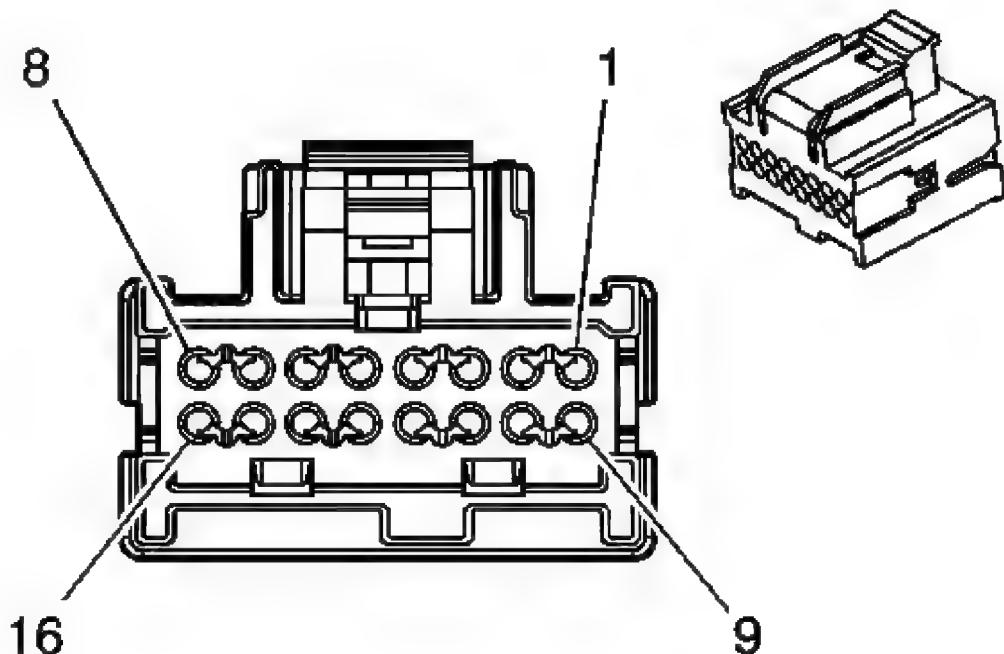


Fig. 41: Headlamp Switch Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 15416970
- Service: 22715969
- Description: 16-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Pins: 1, 2, 3, 6, 7, 8, 12, 13, 15
- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M

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- Release Tool/Test Probe: 15381651-2/J-35616-64B (L-BU)

Headlamp Switch

| Pin | Wire Color | Circuit No. | Function |
|------|------------|-------------|--------------------------------------|
| 1 | WH | 103 | Headlamp Switch Headlamps On Signal |
| 2 | L-BU/TN | 13 | Park Lamp Switch ON Signal |
| 3 | D-GN | 306 | Headlamp Switch OFF Signal |
| 4-5 | - | - | Not Used |
| 6 | OG | 192 | Front Fog Lamp Switch Signal (T96) |
| 7 | GY | 8 | Instrument Panel Lamp Supply Voltage |
| 8 | BK | 450 | Ground |
| 9-11 | - | - | Not Used |
| 12 | PK/BK | 1597 | Courtesy Lamp Switch On Signal |
| 13 | PK | 1444 | I/P Dimming Signal |
| 14 | - | - | Not Used |
| 15 | OG/WH | 812 | 12-Volt Reference |
| 16 | - | - | Not Used |

I/P Compartment Lamp

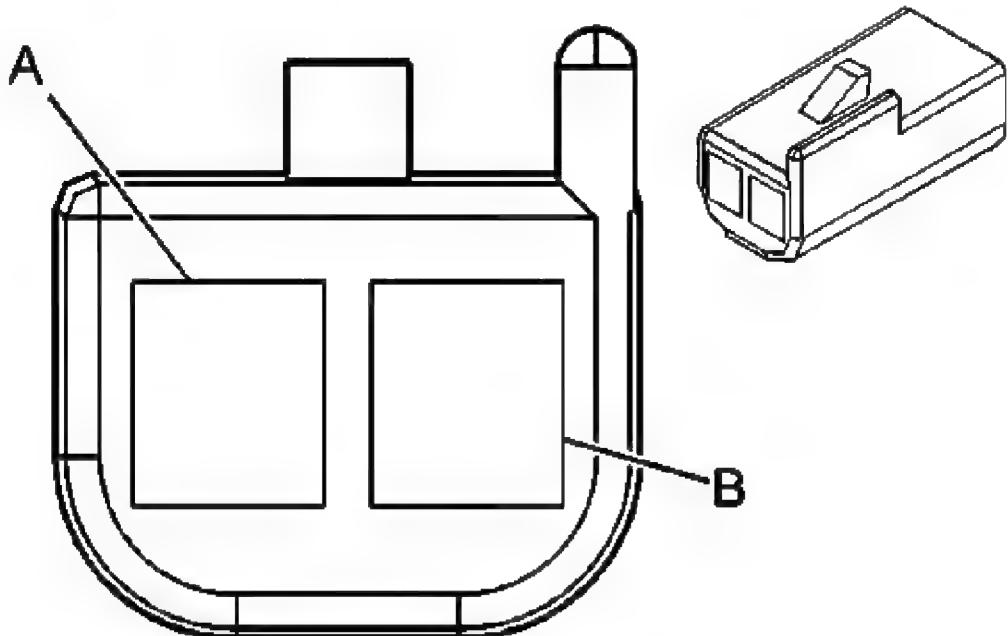


Fig. 42: I/P Compartment Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

I/P Compartment Lamp

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------|
| A | OG | 1732 | 12-Volt Reference |
| B | BK | 450 | Ground |

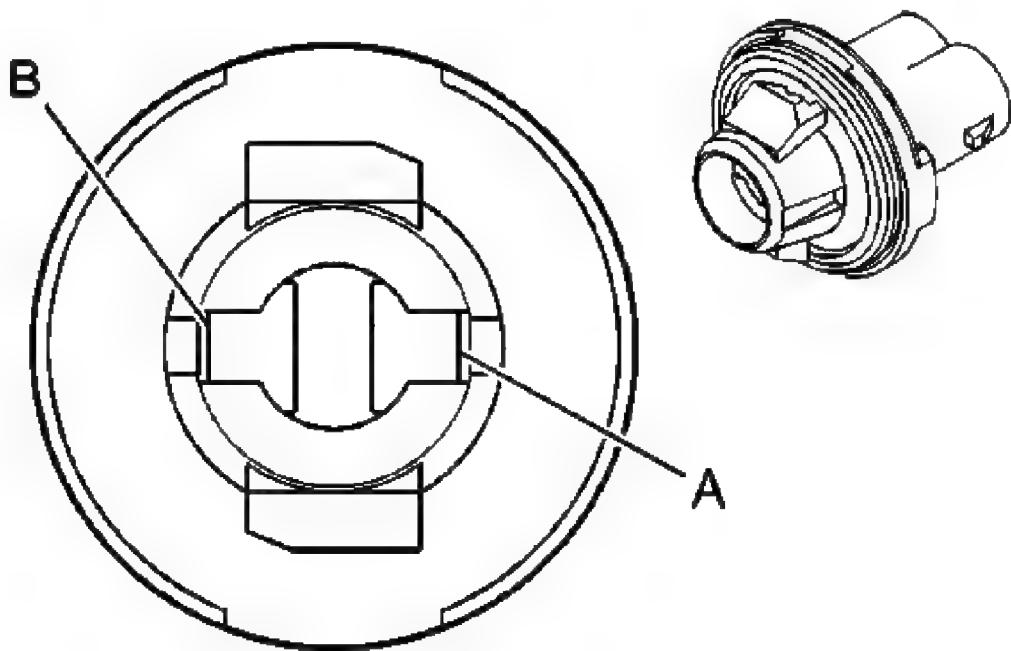
License Lamps

Fig. 43: License Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 15324946
- Service: See Catalog
- Description: 2-Way F Lamp Socket Wedge Base W2 (GY)

Terminal Part Information

- Pins: A, B
- Terminal/Tray: 12124471/5
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: 12094430/N/A

License Lamps

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------|
| | | | |

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| | | | |
|---|-------|------|-----------------------------|
| A | BN/WH | 309 | License Lamp Supply Voltage |
| B | BK | 1050 | Ground |

Marker Lamp - LF

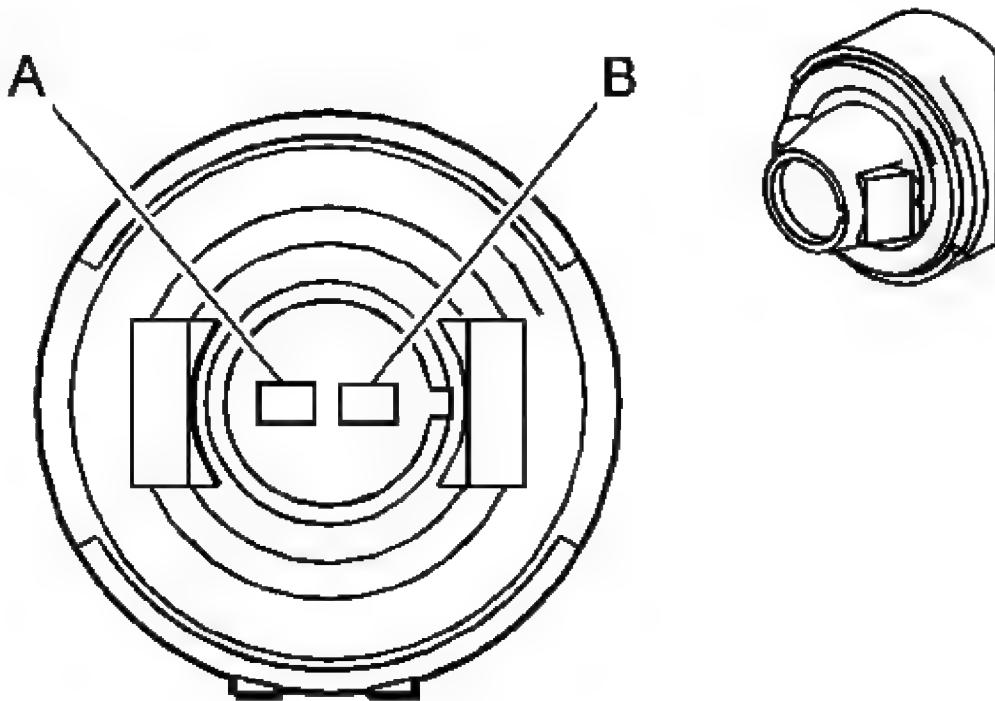


Fig. 44: Left Front Marker Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - LF

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------|
| A | PU | - | Left Marker Lamp Supply Voltage |
| | PU | - | Left Marker Lamp Supply Voltage |
| B | BK | - | Ground |
| | BK | - | Ground |
| | BK | - | Ground (TUH) |

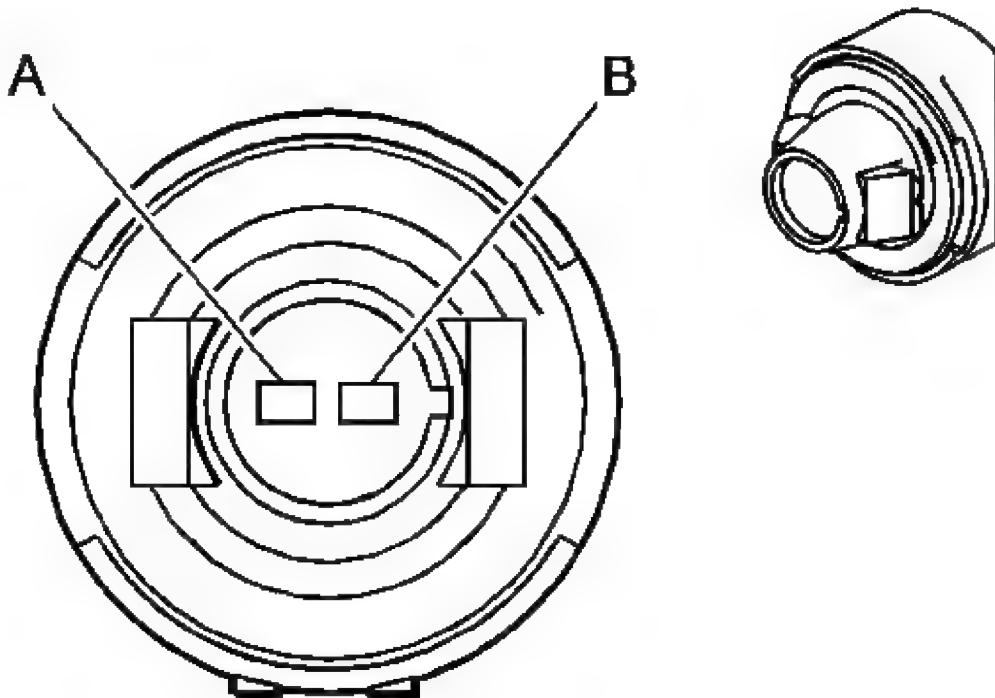
Marker Lamp - RF

Fig. 45: Right Front Marker Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - RF

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------------------------------|
| A | BN/WH | - | Right Marker Lamp Supply Voltage |
| | BN/WH | - | Right Marker Lamp Supply Voltage |
| B | BK | - | Ground |
| | BK | - | Ground |
| | BK | - | Ground (TUH) |

Marker Lamp - Left Rear

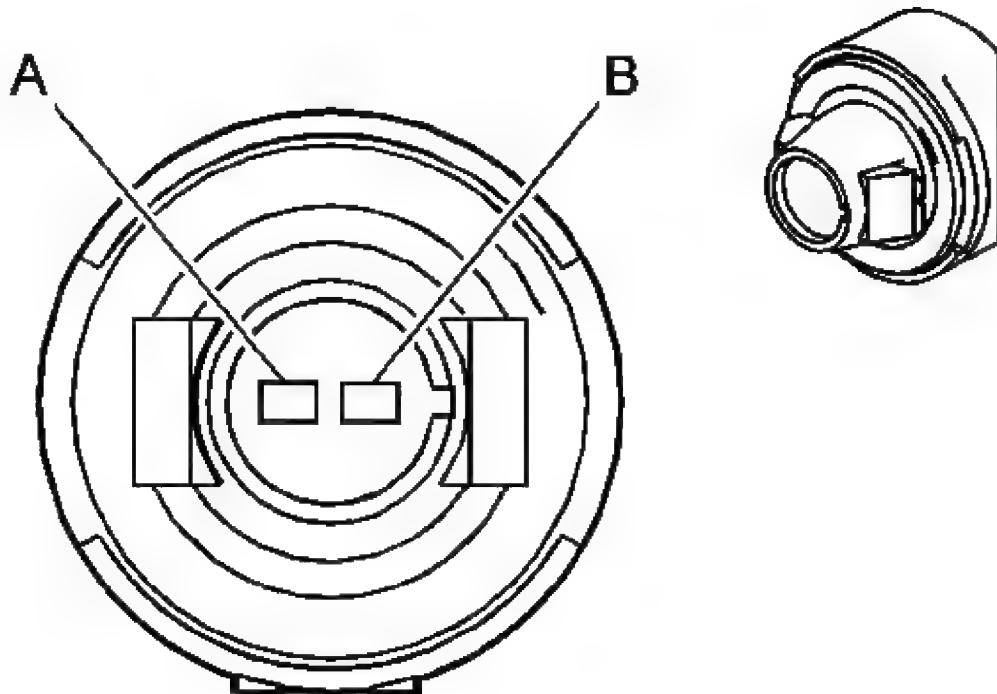


Fig. 46: Left Rear Marker Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

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Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - Left Rear

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------|
| A | BN | - | Left Marker Lamp Supply Voltage |
| B | BK | - | Ground |

Marker Lamp - Right Rear

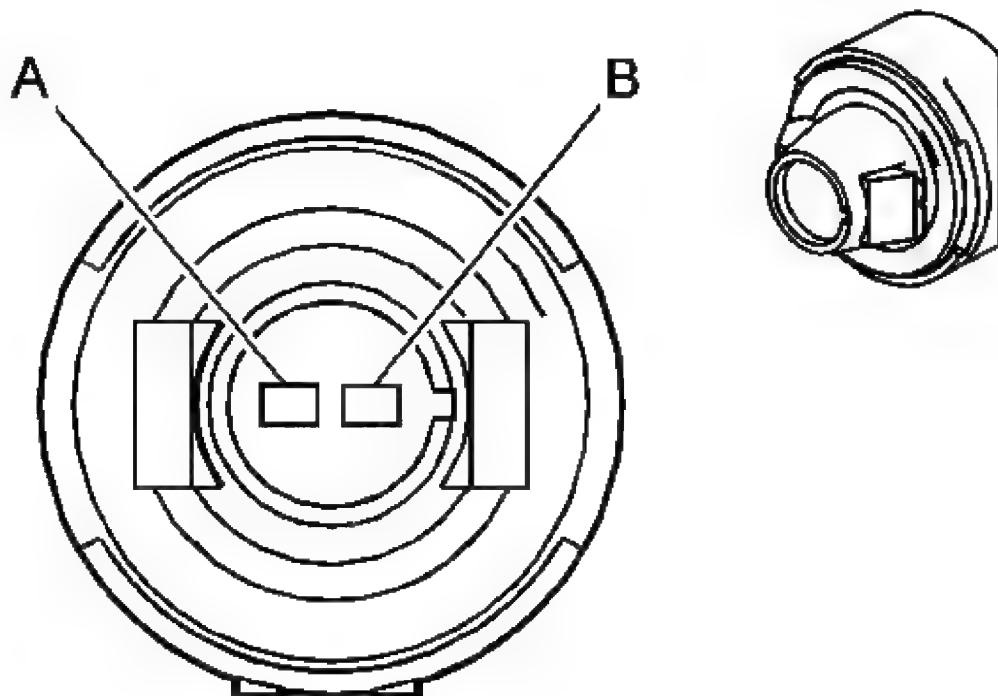


Fig. 47: Right Rear Marker Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.**Lighting Systems Connector End Views****Connector Part Information**

- OEM: 16530675
- Service: See Catalog
- Description: 2-Way F Socket (GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - Right Rear

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------------------------------|
| A | BN | - | Right Marker Lamp Supply Voltage |
| B | BK | - | Ground |

Overhead Console Lamp

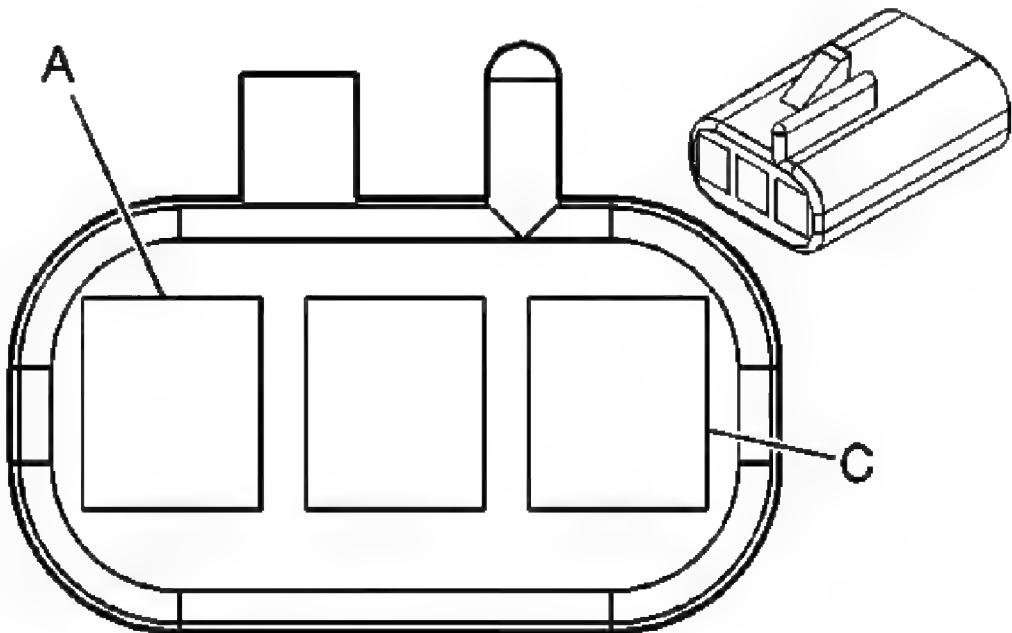


Fig. 48: Overhead Console Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: A
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit
- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

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Overhead Console Lamp

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------|
| A | BK | 850 | Ground |
| B | GY/BK | 690 | Courtesy Lamp Control |
| C | OG | 1732 | 12-Volt Reference |

Park/Turn Signal Lamp - LF

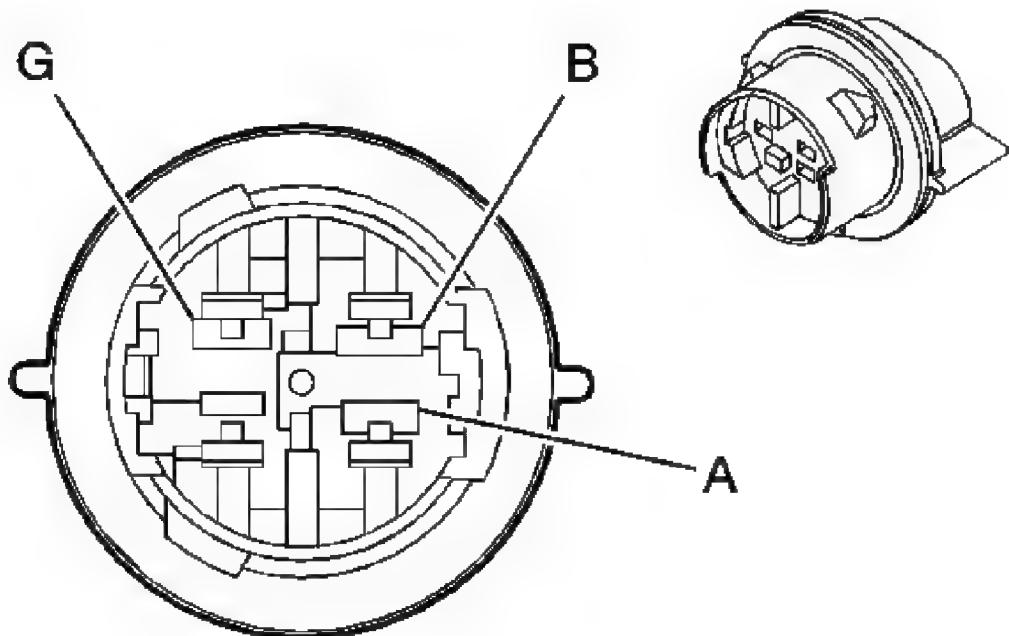


Fig. 49: Left Front Park/Turn Signal Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530673
- Service: See Catalog
- Description: 3-Way F Socket (WH)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

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- Release Tool/Test Probe: See Terminal Repair Kit

Park/Turn Signal Lamp - LF

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--------------------------------------|
| A | D-BU/WH | - | Left Park Lamp Supply Voltage |
| B | PU | - | Left Turn Signal Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Park/Turn Signal Lamp - RF

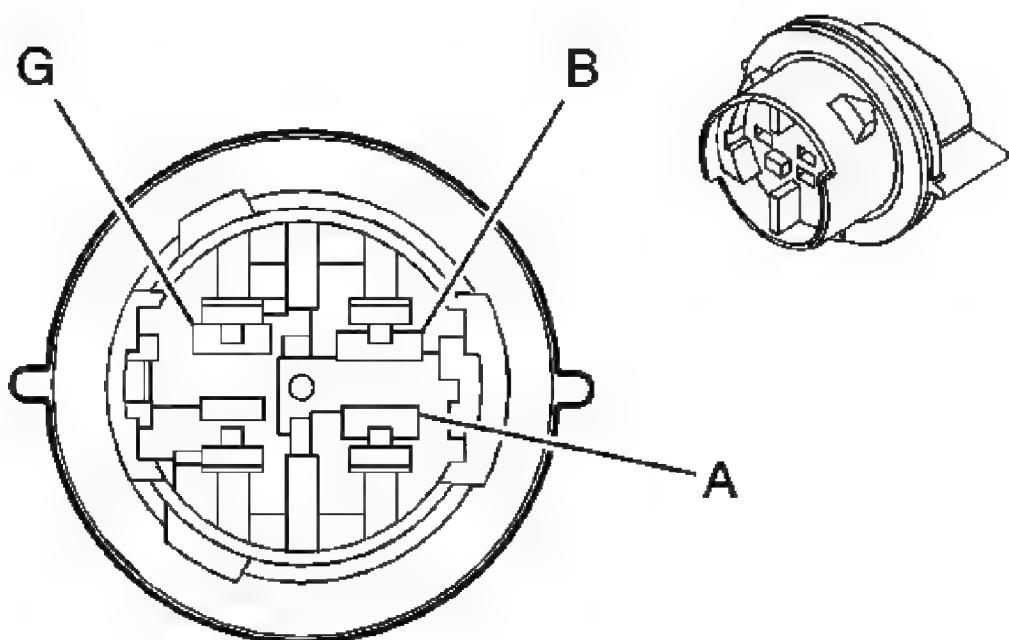


Fig. 50: Right Front Park/Turn Signal Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 16530673
- Service: See Catalog
- Description: 3-Way F Socket (WH)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Park/Turn Signal Lamp - RF

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------------|
| A | D-BU/WH | - | Right Park Lamp Supply Voltage |
| B | PU | - | Right Turn Signal Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Rear Compartment Courtesy Lamp

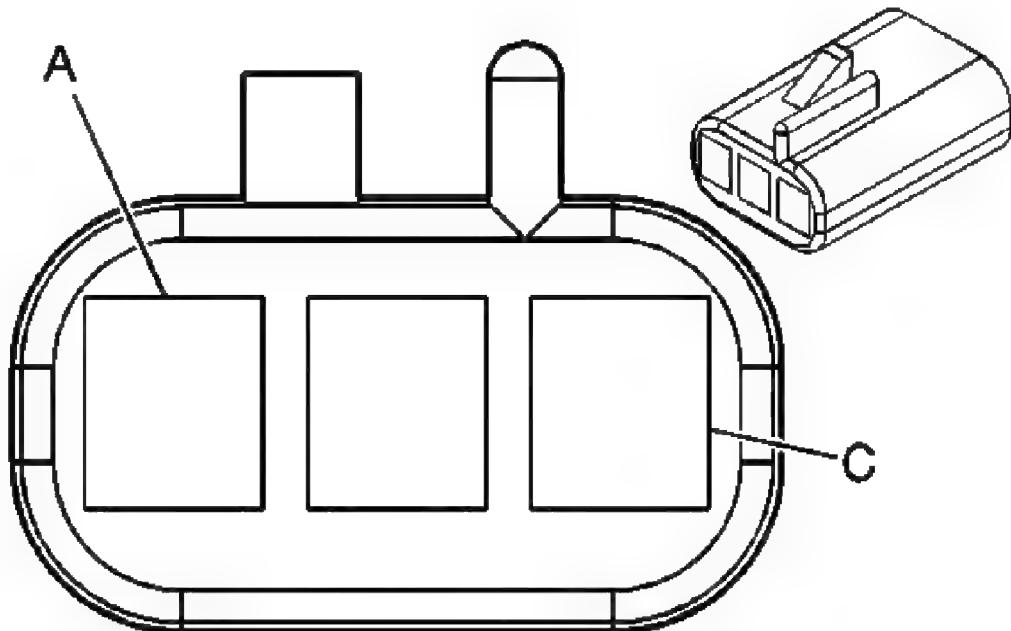


Fig. 51: Rear Compartment Courtesy Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

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- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Rear Compartment Courtesy Lamp

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--------------------|
| A | - | - | Not Used |
| B | OG/BK | 737 | Trunk Lamp Control |
| C | OG | 1732 | 12-Volt Reference |

Roof Rail Reading Lamp - Left

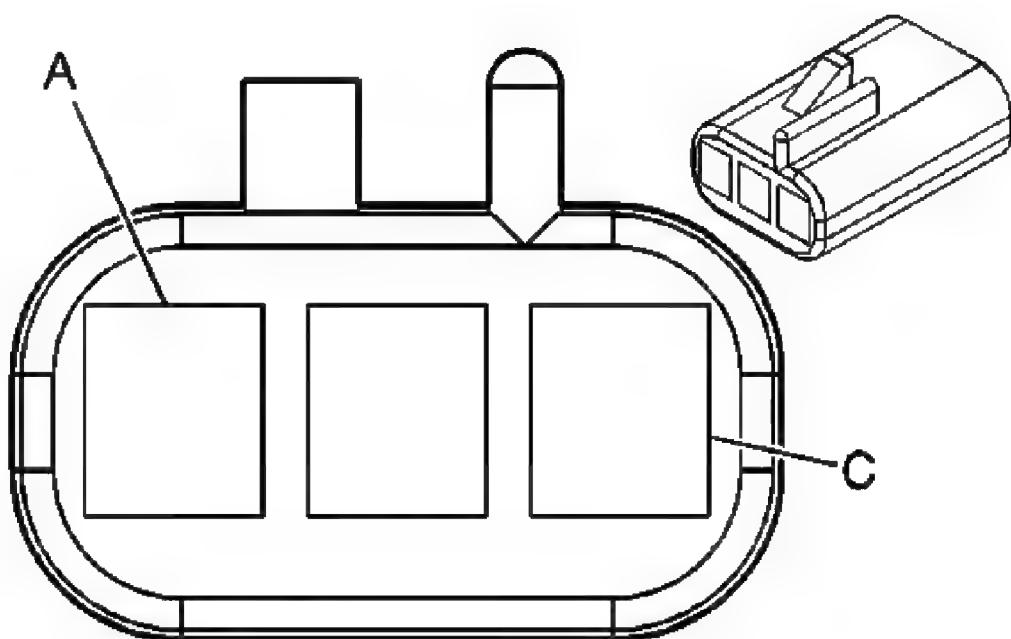


Fig. 52: Left Roof Rail Reading Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

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Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: A
 - Terminal/Tray: See Terminal Repair Kit
 - Core/Insulation Crimp: See Terminal Repair Kit
 - Release Tool/Test Probe: See Terminal Repair Kit
- Pins: B, C
 - Terminal/Tray: 12064971/5
 - Core/Insulation Crimp: E/C
 - Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Roof Rail Reading Lamp - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------|
| A | GY/BK | 690 | Courtesy Lamp Low Control |
| B | BK | 850 | Ground |
| C | OG | 1732 | Courtesy Lamps Supply Voltage |

Roof Rail Reading Lamp - Right

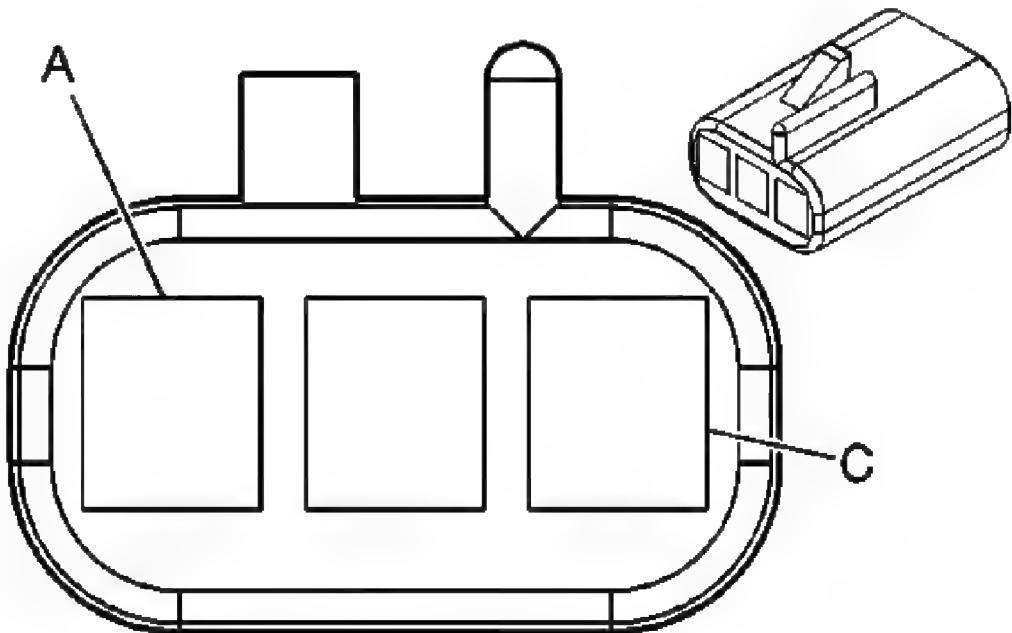


Fig. 53: Right Roof Rail Reading Lamp Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: A
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit
- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

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Roof Rail Reading Lamp - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------|
| A | GY/BK | 690 | Courtesy Lamp Control |
| B | BK | 850 | Ground |
| C | OG | 1732 | Courtesy Lamps Supply Voltage |

Stop/Tail/Turn Signal Lamp - Left

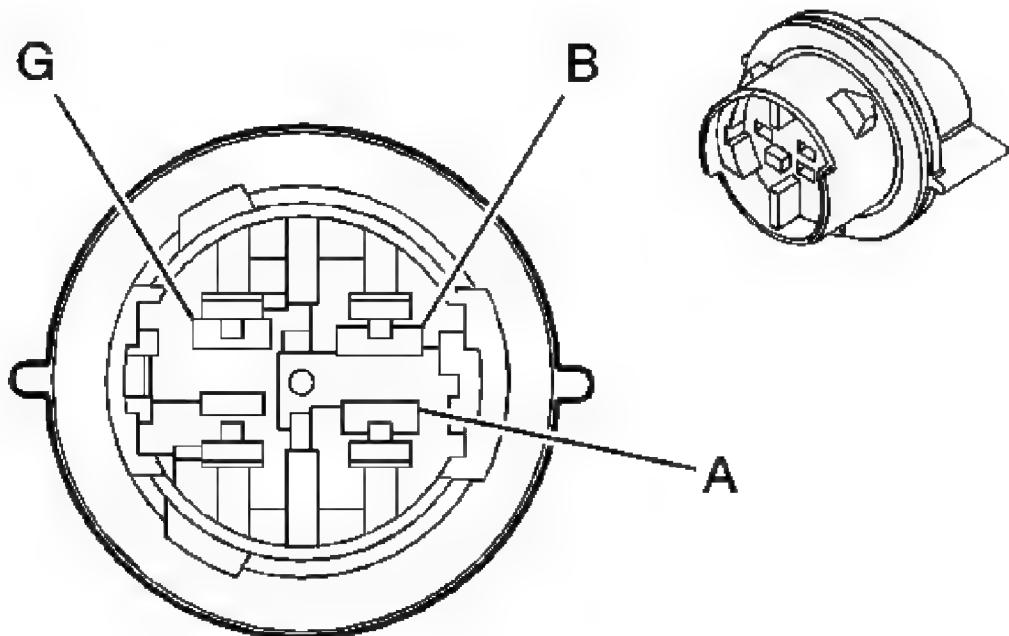


Fig. 54: Left Stop/Tail/Turn Signal Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12160395
- Service: See Catalog
- Description: 3-Way F Socket (WH)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

- Release Tool/Test Probe: See Terminal Repair Kit

Stop/Tail/Turn Signal Lamp - Left

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---|
| A | YE | - | Left Stop/Turn Signal Lamp Supply Voltage |
| B | BN | - | Left Stop/Turn Signal Lamp Supply Voltage |
| | BN | - | Left Stop/Turn Signal Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Stop/Tail/Turn Signal Lamp - Right

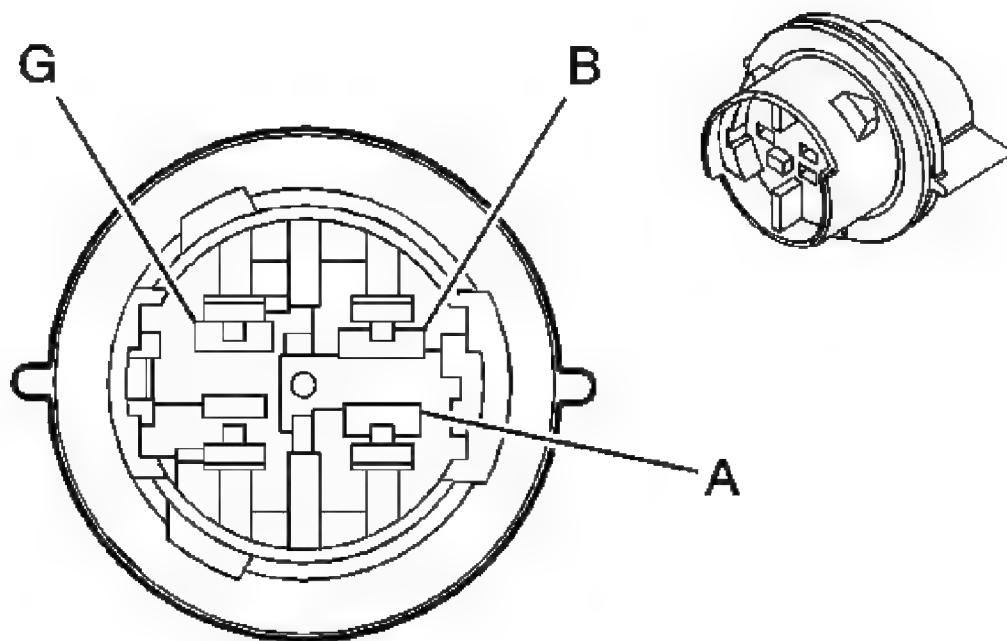


Fig. 55: Right Stop/Tail/Turn Signal Lamp Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

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2006 ACCESSORIES & EQUIPMENT Lighting Systems - Lucerne

- OEM: 12160395
- Service: See Catalog
- Description: 3-Way F Socket (WH)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Stop/Tail/Turn Signal Lamp - Right

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|--|
| A | YE | - | Right Stop/Turn Signal Lamp Supply Voltage |
| B | BN | - | Right Stop/Turn Signal Lamp Supply Voltage |
| | BN | - | Right Stop/Turn Signal Lamp Supply Voltage |
| G | BK | - | Ground |
| | BK | - | Ground |

Sunload Twilight Sensor (CJ2)

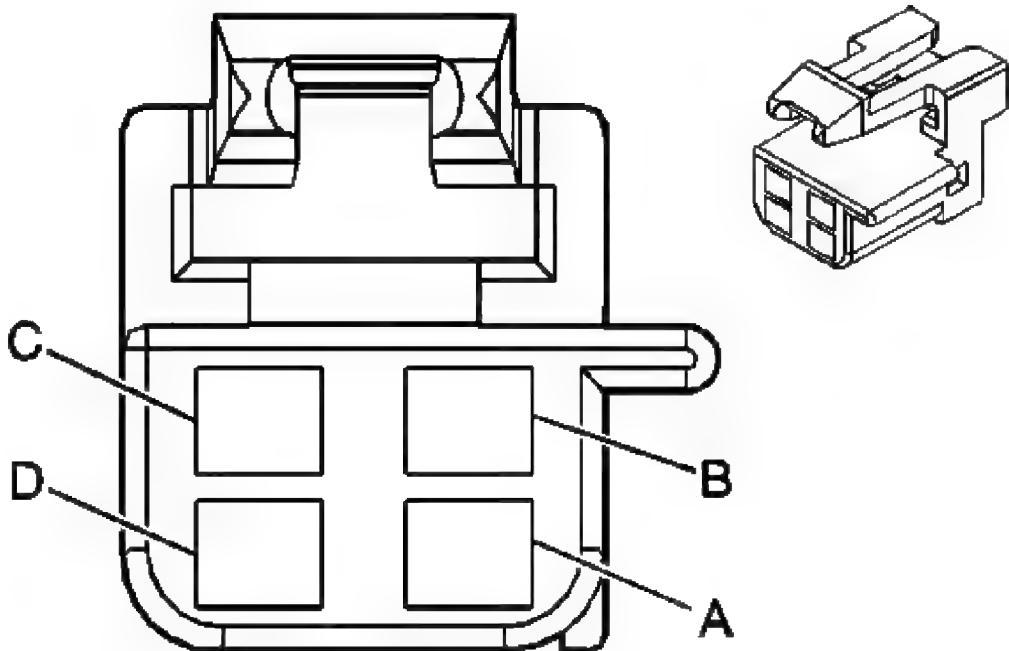


Fig. 56: Sunload Twilight Sensor (CJ2) Connector End View

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12064760
- Service: 12085208
- Description: 4-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: A, B, D
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)
- Pins: C
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

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- Release Tool/Test Probe: See Terminal Repair Kit

Sunload Twilight Sensor (CJ2)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------------|
| A | L-BU/BK | 590 | Left Sunload Sensor Signal |
| B | GY | 1548 | Right Sunload Sensor Signal |
| C | BK | 350 | Ground |
| D | L-GN/BK | 1137 | Ambient Light Sensor Signal |

Sunload Twilight Sensor (C67)

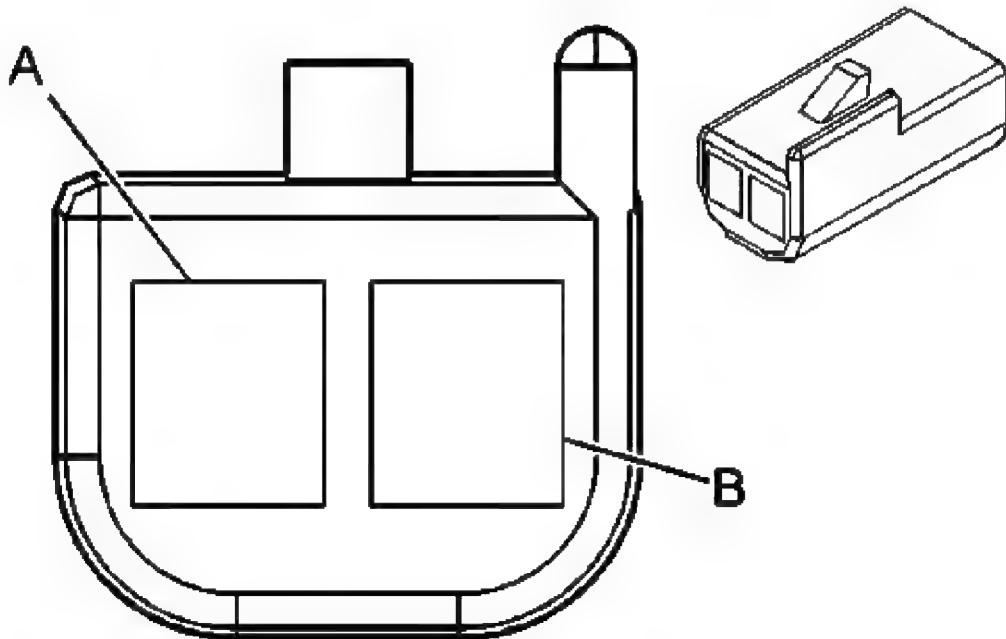


Fig. 57: Sunload Twilight Sensor (C67) Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Sunload Twilight Sensor (C67)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-----------------------------|
| A | L-GN/BK | 1137 | Ambient Light Sensor Signal |
| B | BK | 350 | Ground |

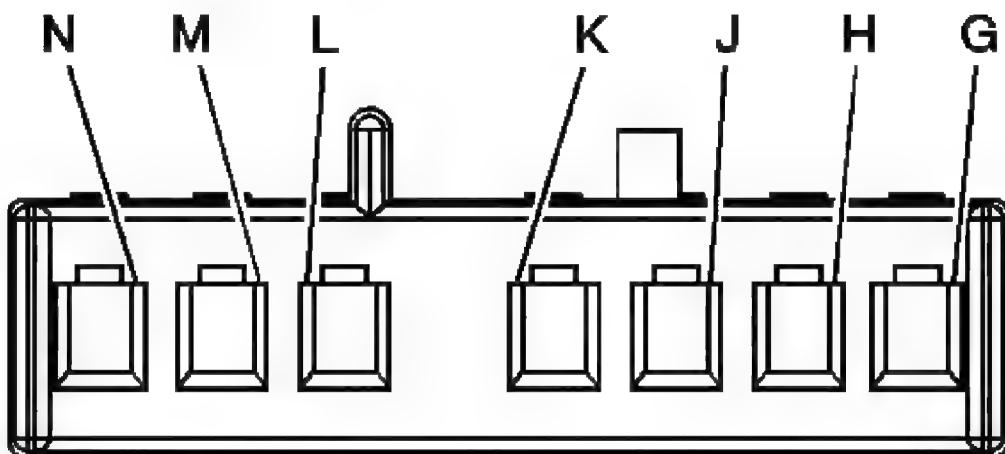
Turn Signal/Multifunction Switch C1

Fig. 58: Turn Signal/Multifunction Switch C1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 15339058
- Service: See Catalog
- Description: 7-Way F Metri-pack 150 Series (GY)

Terminal Part Information

- Pins: H, J, K, L

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal/Multifunction Switch C1

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------------|
| G | - | - | Not Used |
| H | BK/WH | 1251 | Ground |
| J | PK | 94 | Windshield Washer Switch Signal |
| K | L-GN | 1715 | Windshield Wiper Switch High Signal |
| L | L-BU | 1714 | Windshield Wiper Switch Low Signal |
| M-N | - | - | Not Used |

Turn Signal/Multifunction Switch C2

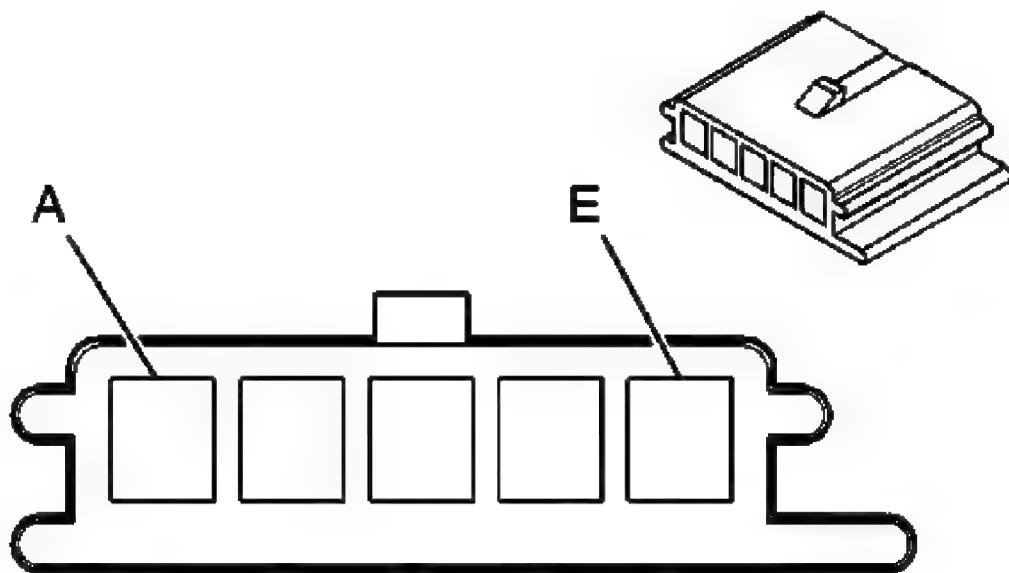


Fig. 59: Turn Signal/Multifunction Switch C2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12059800
- Service: 15306169
- Description: 5-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: A, D, E
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal/Multifunction Switch C2

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------|
| A | YE | 307 | Flash to Pass Switch Signal |
| B-C | - | - | Not Used |
| D | BK | 350 | Ground |
| E | PU | 524 | Headlamp Switch Highbeam Signal |

Turn Signal/Multifunction Switch C3

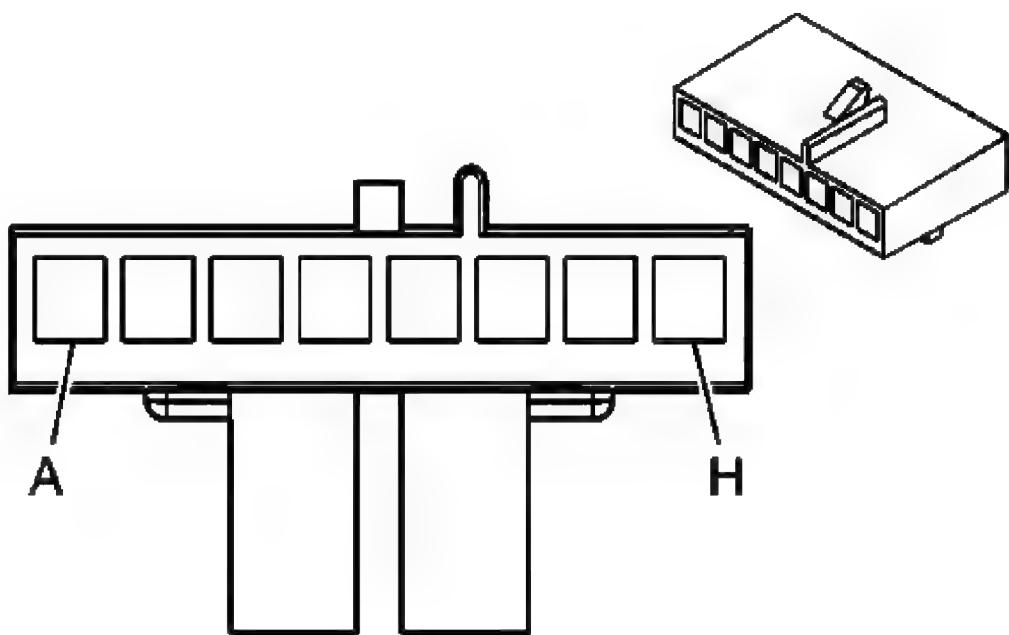


Fig. 60: Turn Signal/Multifunction Switch C3 Connector End View

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Courtesy of **GENERAL MOTORS CORP.**

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12064862
- Service: 12126438
- Description: 8-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Pins: F, G, H
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal/Multifunction Switch C3

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---------------------------------|
| A-E | - | - | Not Used |
| F | L-BU/WH | 1414 | Left Turn Signal Switch Signal |
| G | BK | 350 | Ground |
| H | D-BU/WH | 1415 | Right Turn Signal Switch Signal |

Turn Signal/Multifunction Switch C4 (XA7)

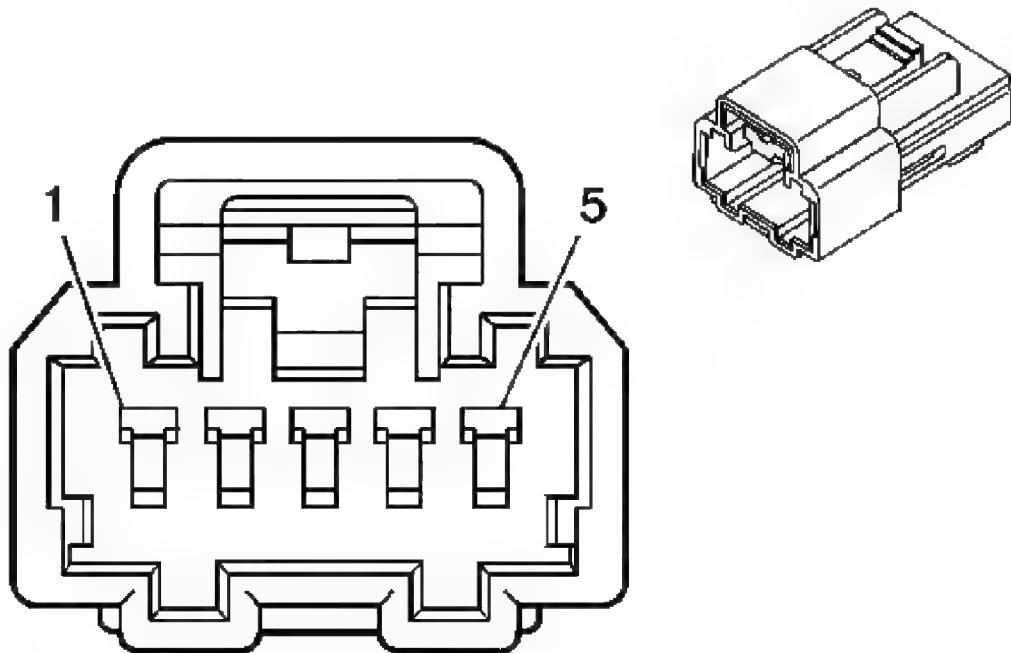


Fig. 61: Turn Signal/Multifunction Switch C4 (XA7) Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: HCMW-5C
- Service: See Catalog
- Description: 5-Way F (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal/Multifunction Switch C4 (XA7)

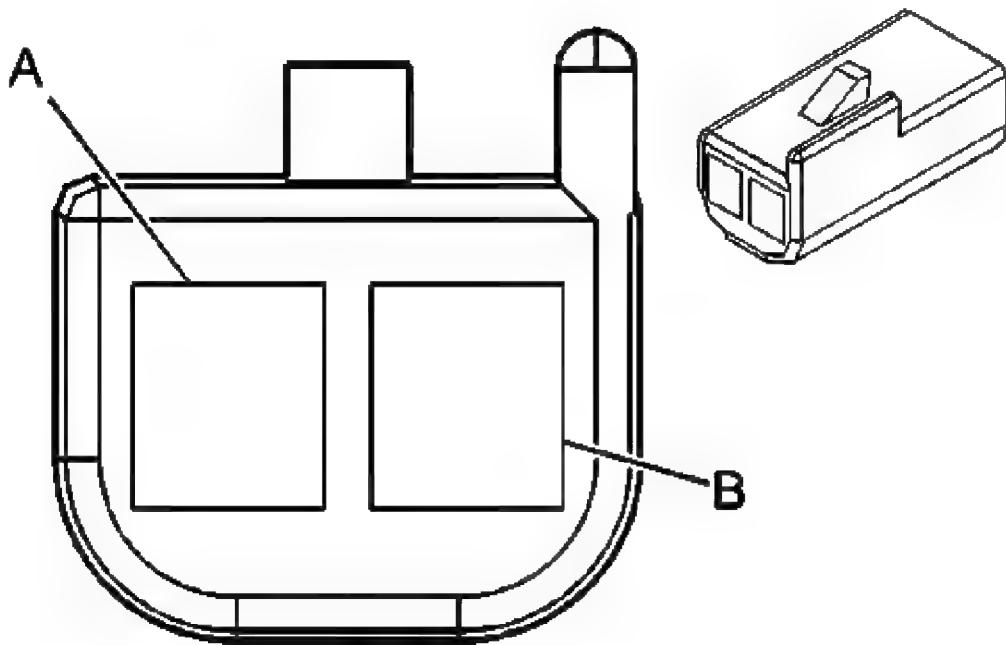
| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|---|
| 1 | L-GN | 6096 | Washer Fluid Heated Control Switch Signal |
| 2 | BK | 350 | Ground |

3-5

-

-

Not Used

Vanity Mirror Lamp - LF (DH6)**Fig. 62: Left Front Vanity Mirror Lamp (DH6) Connector End View**

Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views**Connector Part Information**

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Vanity Mirror Lamp - LF (DH6)

| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|----------|
|-----|------------|-------------|----------|

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| | | | |
|---|----|------|-------------------------------|
| A | OG | 1732 | Courtesy Lamps Supply Voltage |
| B | BK | 850 | Ground |

Vanity Mirror Lamp - RF (DH6)

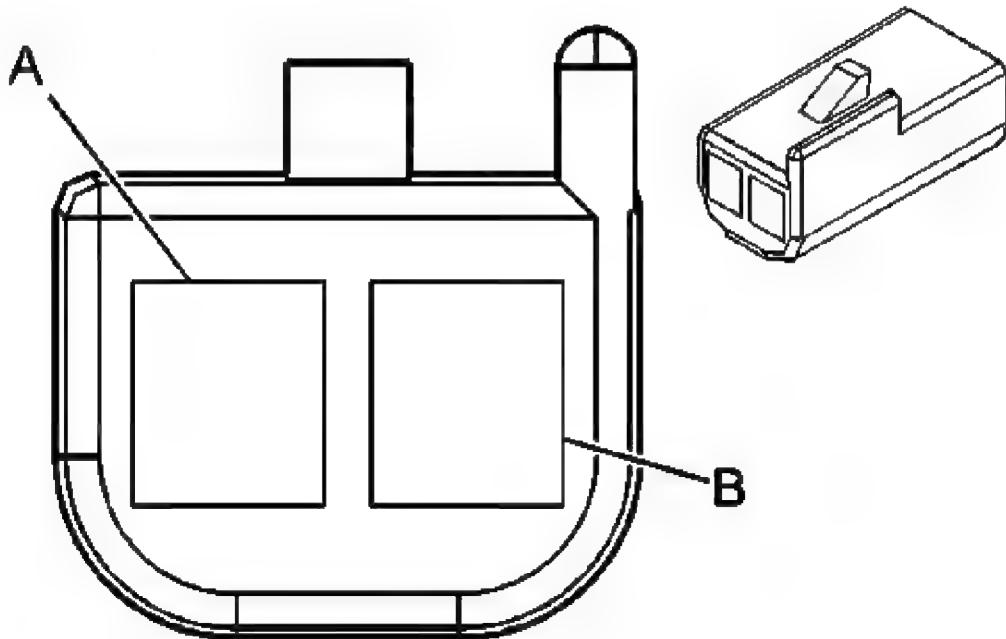


Fig. 63: Right Front Vanity Mirror Lamp (DH6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Lighting Systems Connector End Views

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-2A (GY)

Vanity Mirror Lamp - RF (DH6)

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| Pin | Wire Color | Circuit No. | Function |
|-----|------------|-------------|-------------------------------|
| A | OG | 1732 | Courtesy Lamps Supply Voltage |
| B | BK | 850 | Ground |

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

| DTC | Description |
|---------------------------|---------------------------------|
| DTC B257A | ** DESCRIPTION NOT COLLECTED ** |
| DTC B1395 | **DESCRIPTION NOT COLLECTED ** |
| DTC B1480 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2530 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2545 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2555 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2575 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2580 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2585 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2590 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2595 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2610 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2615 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2625 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2645 | **DESCRIPTION NOT COLLECTED ** |
| DTC B2652 | **DESCRIPTION NOT COLLECTED ** |
| DTC B3445 | **DESCRIPTION NOT COLLECTED ** |
| DTC B3600 | **DESCRIPTION NOT COLLECTED ** |
| DTC C0277 or C0890 | ** MULTIPLE VALUES ** |
| DTC C0297 | **DESCRIPTION NOT COLLECTED ** |
| DTC P0572 | **DESCRIPTION NOT COLLECTED ** |
| DTC P0573 | **DESCRIPTION NOT COLLECTED ** |

DIAGNOSTIC STARTING POINT - LIGHTING SYSTEMS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle**. The Diagnostic System Check - Vehicle will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit

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- The identification of any stored diagnostic trouble codes (DTCs) and their status

The Use of the Diagnostic System Check - Vehicle will identify the correct procedure for diagnosing the system and where the procedure is located.

SCAN TOOL OUTPUT CONTROLS

Body Control Module (BCM)

| Scan Tool Output Control | Additional Menu Selection(s) | Description |
|--------------------------|------------------------------|---|
| Backup Lamps | Exterior Lighting | The BCM activates or deactivates the Backup Lamps when commanded ON or OFF. |
| Courtesy Lamp | Interior Lighting | The BCM activates or deactivates the Courtesy Lamps when commanded ON or OFF. |
| Fog Lamps | Exterior Lighting | The BCM activates or deactivates the Fog Lamps when commanded ON or OFF. |
| High Beams | Exterior Lighting | The BCM activates or deactivates the High Beams when commanded ON or OFF. |
| Incandescent Dimming | Interior Lighting | The BCM activates or deactivates the Incandescent Dimming when commanded ON or OFF. |
| LF Turn Signal | Exterior Lighting | The BCM activates or deactivates the LF Turn Signals when commanded ON or OFF. |
| Low Beams | Exterior Lighting | The BCM activates or deactivates the Low Beams when commanded ON or OFF. |
| LR Turn Signal | Exterior Lighting | The BCM activates or deactivates the LR Turn Signal when commanded ON or OFF. |
| Parking Lamps | Exterior Lighting | The BCM activates or deactivates the Parking Lamps when commanded ON or OFF. |
| RF Turn Signal | Exterior Lighting | The BCM activates or deactivates the RF Turn Signals when commanded ON or OFF. |
| RR Turn Signal | Exterior Lighting | The BCM activates or deactivates the RR Turn Signal when commanded ON or OFF. |

SCAN TOOL DATA LIST

Scan Tool Data List

| Scan Tool Parameter | Data Display | Units Displayed | Typical Data Value |
|---------------------|--------------|-----------------|--------------------|
| | | | |

Operating Conditions: Ignition in the ON position. Bright Light Applied to the DRL ambient light sensor. Park brake not set. Headlamp Switch in the OFF

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position. I/P lamp switch in the OFF position. Fog lamp switch in the OFF position.

| Ambient Light Sensor | Exterior Lighting | Volts | Volts |
|----------------------------------|-------------------|------------------------------|----------|
| Ambient Light Status | Exterior Lighting | Night/Day Unknown/Invalid | - |
| Auto Hdlp. Disable Sw. | Exterior Lighting | Inactive/Active | - |
| Backup Lamps | Exterior Lighting | ON/OFF | OFF |
| Brake Applied Output Signal | Exterior Lighting | ON/OFF | OFF |
| Brake Applied Output Signal | Outputs | ON/OFF | OFF |
| Courtesy Lamp PWM Command | Interior Lighting | % | % |
| Courtesy Lamp Active Reason | Interior Lighting | ON/OFF | OFF |
| Dimming Control Reference | Interior Lighting | Volts | Volts |
| Dimming Control Signal | Interior Lighting | % | % |
| Dimming Control Signal | Interior Lighting | Volts | Volts |
| Flash to Pass Switch | Exterior Lighting | Inactive/Active | Inactive |
| Front Fog Lamp Relay Command | Exterior Lighting | ON/OFF | OFF |
| Front Fog Lamp Switch | Exterior Lighting | Inactive/Active | Inactive |
| Hazard Lamp Switch | Exterior Lighting | Inactive/Active | Inactive |
| Headlamp Switch | Exterior Lighting | Inactive/Active | Inactive |
| High Beam Relay Command | Exterior Lighting | ON/OFF | OFF |
| High Beam Select Switch | Exterior Lighting | Inactive/Active | Inactive |
| Incandescent Dimming PWM Command | Interior Lighting | % | % |
| LED Dimming PWM Command | Interior Lighting | % | % |
| Left Turn Signal Switch | Exterior Lighting | Inactive/Active | Inactive |
| LF Turn Signal | Exterior Lighting | ON/OFF | OFF |
| LR Turn Signal | Exterior Lighting | ON/OFF | OFF |
| Low Beam Relay Command | Exterior Lighting | ON/OFF | Inactive |
| Park Brake Switch | Inputs | Applied/Released | Released |
| Park Lamp Relay Command | Exterior Lighting | ON/OFF | OFF |
| Park Lamp Switch | Exterior Lighting | Inactive/Active | Inactive |
| Right Turn Signal Switch | Exterior Lighting | Inactive/Active | Inactive |
| RF Turn Signal | Exterior Lighting | ON/OFF | OFF |
| RR Turn Signal | Exterior Lighting | ON/OFF | OFF |
| Stop Lamp Relay Command | Exterior Lighting | ON/OFF | OFF |

| | | | |
|--------------|--------|-----------------|----------|
| Valet Switch | Inputs | Inactive/Active | Inactive |
|--------------|--------|-----------------|----------|

SCAN TOOL DATA DEFINITIONS

BCM Scan Tool Data Definitions

The BCM Scan Tool Data Definitions contains a brief description of all lighting system related BCM parameters available on the scan tool.

Brake Pedal Data List

BPPS High During Learn

The scan tool displays No or Yes. The scan tool displays Yes if signal is high during learn.

BPPS Learned Home Position

The scan tool displays voltage. The brake pedal position sensor learned home value of 0-5 volts.

BPPS Low During Learn

The scan tool displays No or Yes.

BPPS Move During Learn

The scan tool displays No or Yes.

BPP Sensor Circuit

The scan tool displays Inactive or Active. The commanded state of the brake pedal position sensor. When the brakes are applied the scan tool will display Active.

BPP Sensor

The scan tool displays Counts. With brake applied displays 1 to 3 counts. Unapplied displays 0.

BPP Sensor Reference

The scan tool displays Counts. Always displays 1 to 3 counts.

BPPS Status

The scan tool displays Unlearned/Learned/Invalid/Undecided. This is the status of the

brake pedal position sensor with regards to learning the home position.

Brake Applied Output Signal

The scan tool displays On/OFF. When the brake is applied this parameter displays ON.

Calculated Brake Pedal Position

The scan tool displays counts. when the brake is applied displays 2 counts. When the brake is not applied displays 255 counts.

Exterior Lighting Data List

Ambient Light Sensor

The scan tool displays Volts. When the ambient light is high the voltage is high.

Ambient Light Status

The scan tool displays Night/Day/Unknown/Invalid.

Auto Hdlp. disable Sw.

The scan tool displays Inactive/Active. The scan tool only displays active when the switch is rotated and held in position. When the switch is rotated, the scan tool displays active for auto lts. ON and for auto lts. OFF.

Auto Hdlp. disable Sw.

The scan tool displays Inactive/Active.

Backup Lamps

The scan tool displays On/Off.

Brake Applied Output Signal

The scan tool displays On/Off. This output of the BCM is displayed as ON when the brake pedal is applied.

Flash to Pass Switch

The scan tool displays Inactive/Active. When the flash to pass switch is activated, the scan tool will display Active until the switch is released. Flash to pass does not operate if the head light switch is in the Auto, OFF or running lights only position.

Front Fog lamp Relay Command

The scan tool displays ON/OFF. When the fog lamp switch is placed in the ON position, the scan tool will display ON.

Front Fog Lamp Switch

The scan tool displays Inactive/Active. This output of the BCM is displayed as Active as long as the switch is pressed and held.

Hazard Lamp Switch

The scan tool displays Inactive/Active. When the hazard switch is placed in the ON position, the scan tool will display Active.

Headlamp Switch

The scan tool displays Inactive/Active. When the headlamp switch is used to manually select head lights, the scan tool will display active.

High Beam Relay Command

The scan tool displays ON/OFF. When the dimmer switch is activated, the scan tool will display ON. Auto or manual lights must be on for this parameter.

High Beam Select Switch

The scan tool displays Inactive/Active. When dimmer switch is activated the scan tool displays active even if lights are not ON.

Left Cornering Lamp Command

The scan tool displays ON/OFF. When the turn signal switch is placed in the LEFT turn position, the scan tool will display ON. Head light switch auto position must be selected when viewing this parameter.

Left Turn Signal Switch

The scan tool displays Inactive/Active. When the turn signal switch is placed in the LEFT turn position, the scan tool will display Active.

LF Turn Signal

The scan tool displays ON/OFF. This output of the BCM constantly switches from ON to OFF as long as the left turn position is selected.

LR Turn Signal

The scan tool displays ON/OFF. This output of the BCM constantly switches from ON to OFF as long as the left turn position is selected.

Low Beam Relay Command

The scan tool displays ON/OFF. Displays ON when auto or manual head light switch positions are selected.

Park Lamp Relay Command

The scan tool displays ON/OFF. When the headlamp switch is in any position other than OFF the scan tool will display ON.

Park Lamp Switch

The scan tool display Inactive/Active. When the park brake is applied, the scan tool will display ON.

Right Cornering Lamp Command

The scan tool displays ON/OFF. When the turn signal switch is placed in the RIGHT turn position, the scan tool will display ON. Head light switch auto position must be selected when viewing this parameter.

Right Turn Signal Switch

The scan tool displays Inactive/Active. When the turn signal switch is placed in the RIGHT turn position, the scan tool will display Active.

RF Turn Signal

The scan tool displays ON/OFF. This output of the BCM constantly switches from ON to OFF as long as the right turn position is selected.

RR Turn Signal

The scan tool displays ON/OFF. This output of the BCM constantly switches from ON to OFF as long as the right turn position is selected.

Stop Lamp Relay Command

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the brakes are applied.

BCM Inputs Data List**Park Brake Switch**

The scan tool displays Applied/Released. When the brake pedal is applied, the scan tool will display applied.

Valet Switch

The scan tool displays Inactive/Active. When activated displays Valet Mode on the uplevel radio and display active on the scan tool.

Interior Lighting Data List**Courtesy Lamp PWM Command**

The scan tool displays %. When the courtesy lamps are commanded ON the scan tool displays 99%. Commanded off displays 0%.

Courtesy Lamp Active Reason

The scan tool displays Manual/Door Open/OFF. When the courtesy lamp dimmer switch is manually turned on the scan tool displays Manual. When a door is open the scan tool displays door open.

Dimming Control Reference

The scan tool displays Voltage. Displays approximately 3.2 volts.

Dimming Control Signal

The scan tool displays %. When the dimmer switch is manually rotated to the full dim position the scan tool will display 9%. When rotated to the full bright position the scan tool displays 100%.

Dimming Control Signal

The scan tool displays volts. When the dimmer is rotated to full dim position the scan tool displays 2.9 volts. When rotated to full bright position the scan tool displays 3.19 volts.

Incandescent Dimming PWM Command

The scan tool displays %. When the incandescent lamps are placed in the full dim position the scan tool displays 10%. When placed in the full bright position the scan tool

displays 94%. When commanded ON the scan tool displays 100%. When commanded Off displays 0%.

LED Dimming PWM Command

The scan tool displays %. When the LED lamps are placed in the full dim position the scan tool displays 5%. When placed in the full bright position the scan tool displays 96%. When commanded ON the scan tool displays 100%. When commanded Off displays 0%.

BCM Outputs Data List

Brake Applied Output Signal

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the brake pedal is applied.

DTC B257A

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B257A 00

Headlamp Switch Input Signal Mismatch

Diagnostic Fault Information

DTC B257A

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---------------------|-----------------|----------------------|------------------|--------------------|
| Headlamp Switch Off | B257A 00 | 2, 4 | 4* | - |
| Park Lamp Switch On | B257A 00 | B2057A 00 | B257A 00* | - |
| Headlamp Switch On | B257A 00 | 1 | 1* | - |
| Headlamp Ground | - | 1, 3, 4 | - | - |

* Internal damage to the headlamp switch may occur if shorted to B+

1. Headlamps Inoperative - Low or High Beam

2. Headlamps Always On - Low or High Beam
3. Park/Tail Lamps Inoperative
4. Daytime Running Lamps (DRL) Defeat Inoperative

Circuit/System Description

The body control module (BCM) supplies a B+ reference voltage through each of the headlamp switch signal circuits to the headlamp switch. When the headlamp switch is in the AUTO position, all headlamp switch signal circuits to the BCM are open and the BCM operates in the automatic mode. When the headlamp switch is turned to the PARK position, only the park lamp switch signal circuit is pulled low signaling the BCM park lamps ON request. When the headlamp switch is turned to the HEAD position, the park lamp and headlamp switch signal circuits are both pulled low, signaling the BCM the headlamps ON request. When the headlamp switch is turned to the OFF position, only the headlamp off switch signal circuit is pulled low, signaling the BCM the lights off request.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a mismatch signal between the headlamps OFF signal circuit, the headlamp switch headlamps ON signal circuit and the park lamps ON signal circuit.

Action Taken When the DTC Sets

The BCM disregards the headlamp switch input and defaults to automatic headlamp function.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information**Schematic Reference****Headlights/Daytime Running Lights (DRL) Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON with the headlamp switch in the Auto position, observe the scan tool Exterior Lighting parameters listed below. All parameters should be Inactive.

- Auto Hdlp. Disable Sw.
- Headlamp Switch
- Parklamp Switch

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition ON, test for B+ between the signal circuits listed below and ground.
 - Headlamp switch headlamps ON signal terminal 1
 - Park lamp switch ON signal terminal 2
 - Headlamp switch OFF signal terminal 3
 - If less than the specified value, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
3. Install a 3A fused jumper wire between the headlamp OFF signal circuit terminal 3 and ground. Verify the scan tool Auto Hdlp. Disable Sw. parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the park lamp ON signal circuit terminal 2 and ground. Verify the scan tool Parklamp Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Connect a 3A fused jumper wire between the park lamp ON signal circuit terminal 2 and the headlamps ON signal circuit terminal 1 to ground. Verify the scan tool Headlamp Switch parameter is Active.

- If not the specified value, test the headlamps On signal circuit for a short to voltage or an open/high resistance. If the circuits test normal replace the BCM.
6. If all circuits test normal, replace the headlamp switch.

Component Test**Headlamp Switch**

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for infinite resistance between the signal terminal 3 and the ground terminal 8 with the switch in the Auto position.
 - If not the specified value, replace the headlamp switch.
3. Test for infinite resistance between the signal terminal 1 and the ground terminal 8 with the switch in the Auto position.
 - If not the specified value, replace the headlamp switch.
4. Test for less than 2.0 ohms of resistance between the signal terminal 3 and the ground terminal 8 with the switch in the Off position.
 - If not the specified value, replace the headlamp switch.
5. Test for less than 2.0 ohms of resistance between the signal terminal 1 and the ground terminal 8 with the switch in the Headlamp position.
 - If not the specified value, replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B1395**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC B1395 03**

Voltage Below Threshold

DTC B1395 07

Voltage Above Threshold

Diagnostic Fault Information

DTC B1395

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|-----------------------|----------------------|------------------|--------------------|
| I/P Dimming Voltage Reference | B1395 03, B3600 03 | B3600 03 | - | B1395 07 |
| Instrument Panel Lamps Dimmer Switch Signal | B3600 03 | B3600 03 | 1 | - |
| 1. Interior Backlighting Inoperative | | | | |

Circuit/System Description

The BCM supplies a voltage reference through the instrument panel (I/P) dimming voltage reference circuit to the interior lamp dimmer switch, which is part of the headlamp switch. When the dimmer switch is placed in a desired brightness position, reference voltage is applied through the dimmer switch rheostat and the I/P lamps dimmer switch signal circuit to the BCM. The BCM interprets this voltage signal, then applies a pulse width modulated (PWM) voltage through the I/P lamps supply voltage circuit and the LED dimming supply circuit to all related interior lamps, illuminating them to the desired level of brightness.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

B1395 03

The BCM detects a voltage that is lower than 9 volts on the I/P dimming voltage reference circuit.

B1395 07

The BCM detects a voltage that is greater than 14 volts on I/P dimming voltage reference circuit.

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Interior Lights Dimming Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, cover the ambient light sensor, vary the interior lamp dimming switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition ON, test for B+ between the reference voltage circuit terminal 15 and ground.
 - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit test normal, replace the BCM.
3. Ignition OFF, disconnect the (C3) harness connector at the BCM.
4. Ignition ON, test the 12 volt reference circuit terminal 12 for a short to voltage.
5. If all circuits test normal, replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B1480**DTC Descriptor****DTC B1480 00**

Battery Rundown Protection

Diagnostic Fault Information

IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

DTC B1480

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|-----------------|----------------------|------------------|--------------------|
| Inadvertent Power Courtesy Lamp | B1480 | 1,2,3,4 | - | - |
| 1. I/P Compartment Lamp Inoperative 2. Reading Lamp Inoperative 3. Rear Compartment Lamp Inoperative 4. Vanity Mirror Lamp Inoperative | | | | |

Circuit/System Description

Voltage is applied to the body control module (BCM) from the Interior Lights fuse. The BCM then applies voltage to the following lamps:

- I/P compartment lamp
- Overhead Console lamps
- Rear compartment lamp
- Rear roof rail lamps
- Vanity mirror lamps

In the event that any of these lamps were to remain illuminated for more than 20 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power

courtesy lamps circuit to prevent total battery discharge.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a ground signal on the inadvertent power courtesy lamp circuit.

Action Taken When the DTC Sets

The inadvertent power courtesy lamps do not illuminate.

Conditions for Clearing the DTC

The BCM clears this code from current when the fault is removed from the system.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, activate each inadvertent power courtesy lamp. Ignition OFF. Activate each inadvertent power courtesy lamp. Lamps should remain illuminated for more than 20 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power courtesy lamps circuit to prevent total battery discharge.

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Circuit/System Testing

1. Clear the DTC. Disconnect all the inadvertent power courtesy lamps related components. Refer to the circuit/system verification for all components that contain the inadvertent power courtesy lamps. Verify the DTC B1480 does not set.
 - o If the DTC resets then test for a short to ground in the inadvertent power courtesy lamps circuit. If the circuit/connections test normal replace the BCM.
2. Reconnect each component one at a time and test for the DTC B1480. If the DTC resets then replace that component.

Repair Procedures

IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Instrument Panel Compartment Lamp Switch Replacement
- Roof Rail Rear Courtesy Lamp Replacement
- Roof Rail Rear Courtesy Lamp Switch Replacement
- Vanity Mirror Lamp Replacement
- Rear Compartment Courtesy Lamp Replacement
- Control Module References for BCM replacement, setup and programming.

DTC B2530

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC B2530 00

Front Fog Lamp Control Circuit

Diagnostic Fault Information

DTC B2530

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|----------------------|-----------------|----------------------|------------------|--------------------|
| Front Fog Lamp Relay | | | | |

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| | | | | |
|--------------------------|---|---|----------|---|
| Control | 2 | 1 | B2530 00 | - |
| 1. Fog Lamps Inoperative | | | | |
| 2. Fog Lamps Always On | | | | |

Circuit/System Description

The fog lamps are controlled by the body control module (BCM) by inputs from the fog lamp switch. When the BCM receives a fog lamps ON command, it grounds the fog lamp relay control circuit in order to energize the FOG LAMP PCB Relay. With the relay energized, battery voltage is applied through the switch side of the relay, the FOG Fuse and the fog lamps supply voltage circuits to the fog lamps.

Conditions for Running the DTC

The ignition is ON. Park lamps must be ON and the fog lamps must be commanded ON.

Conditions for Setting the DTC

This DTC will set when the BCM detects a short to voltage in the front fog lamp relay control circuit.

Action Taken When the DTC Sets

The BCM will deactivate the fog lamp relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections

- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, turn the park lamps ON. Press the front fog lamp switch. The front fog lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between the control circuit terminal 23 and B+.
3. Ignition ON, command the fog lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuit tests normal, replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2545**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B2545 00

Backup Lamps Circuit

Diagnostic Fault Information**DTC B2545**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-----------------------------|-----------------|----------------------|------------------|--------------------|
| B+, BCM C4 Terminal 4 | B2545 00 | B2545 00 | - | - |
| Backup Lamps Voltage Supply | B2545 00 | 1 | 2 | - |
| 1. Backup Lamps Inoperative | | | | |
| 2. Backup Lamps Always On | | | | |

Circuit/System Description

When the PRNDL is placed in the REVERSE position, a signal is sent to the body control module (BCM). The BCM then applies voltage through the backup lamps voltage supply circuit to the left and right backup lamps.

Conditions for Running the DTC

The ignition is ON. The backup lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to ground on the backup lamps supply voltage circuit.

Action Taken When the DTC Sets

The BCM will deactivate the backup lamps for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics**

Connector End View Reference**Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, place the PRNDL to the REVERSE position. The backup lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the (C4) harness connector at the BCM.
2. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the backup lamp supply voltage circuit terminal 2 (C6) for a short to ground.
3. Ignition OFF, disconnect the harness connectors at the components listed below.
 - Inside rearview mirror
 - Left tail lamp assembly
 - Right tail lamp assembly
4. Connect a test lamp between the left backup lamp supply voltage circuit terminal 1 and ground.
5. Ignition ON, command the Backup Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.

6. Clear the DTC with a scan tool.
7. Reconnect each component one at a time and operate the system under the Conditions for Running the DTC. Verify the DTC does not reset as current.
 - o If the DTC resets as current, test or replace the component responsible for setting the DTC.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Tail Lamp Replacement**
- **Inside Rearview Mirror Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2555

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B2555 05

Passenger Compartment Lamp Control Circuit

Diagnostic Fault Information

DTC B2555

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|-----------------|----------------------|------------------|--------------------|
| Courtesy Lamp Control Circuit | B2555 00 | 2 | 1 | - |
| Inadvertent Power Courtesy Lamps | B1480 00 or 3 | 2 | - | - |
| Overhead Ground | - | 2 | - | - |
| 1. Overhead Console Lamp Always On 2. Overhead Console Lamp Malfunction 3. Inadvertent Power Courtesy Lamps Malfunction | | | | |

Circuit/System Description

The CTSY/RF TRN fuse supplies battery voltage to the body control module (BCM). When the BCM commands the courtesy lamps ON, it applies battery voltage through the courtesy lamp relay control circuit to the coil side of the OVRHD LAMPS Relay, energizing the relay. Battery voltage from the inadvertent power courtesy lamp circuit is applied through the switch side of the relay and the courtesy lamp supply voltage circuit to the overhead console lamp, illuminating the courtesy lamp. The BCM also applies battery voltage through the courtesy lamp supply voltage circuit to the left and right roof rail courtesy lamps and the front, middle and rear door courtesy lamps. When any door is opened, the door open switch contacts close and the BCM receives a door-open input and it will illuminate the courtesy lamps. If the BCM receives a door lock or unlock input or a rear hatch open input, it will illuminate the courtesy lamps.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

The BCM detects a short to voltage in the courtesy lamp relay control circuit.

Action Taken When the DTC Sets

The BCM will deactivate the overhead lamps relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Interior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**

• Wiring Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. Ignition OFF, remove the OVRHD LAMPS Relay from the rear fuse block.
2. Connect a test lamp between the control circuit terminal 4 and ground.
3. Ignition ON, command the Courtesy Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, test or replace the overhead lamp relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the relay.
2. Test for 70-100 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 85
 - 30 and 86
 - 30 and 87
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 10A fused jumper wire between relay terminal 85 and B+. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- [Relay Replacement \(Within an Electrical Center\)](#) or [Relay Replacement \(Attached to Wire Harness\)](#)
- [Control Module References](#) for BCM replacement, setup and programming

DTC B2575**Diagnostic Instructions**

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor**DTC 2575 00**

Headlamp Control Circuit

Diagnostic Fault Information**DTC B2575**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| Low Beam Headlamp Relay Control Circuit | 2 | 1 | B2575 00 | - |
| 1. Headlamps Inoperative - Low Beams 2. Headlamps Always On - Low or High | | | | |

Circuit/System Description

Voltage is applied at all times to the low beam headlamp relay from battery voltage. Two different inputs to the body control module (BCM) can turn ON the low beam headlamps. The headlamp switch and the ambient light sensor.

Automatic Headlamps Operation

When the ambient light sensor detects a low light condition, the BCM then applies a ground to the headlamp low beam relay control circuit. This energizes the LO BEAM PCB Relay and voltage is applied through the switch side of the relay and both low beam headlamp fuses to the low beam headlamps.

Headlamp Switch Operation

When the headlamp switch is placed in the ON position, ground is applied through the headlamp switch headlamps On signal circuit to the BCM. The BCM then applies a ground through the headlamp low beam relay control circuit. This energizes the LO BEAM PCB Relay and voltage is applied through the switch side of the relay and both low beam headlamp fuses to the low beam headlamps.

Conditions for Running the DTC

- The low beam headlamps are commanded ON.
- The headlamp dimmer switch must be in the low beam position.

Conditions for Setting the DTC

The BCM detects a short to voltage on the low beam headlamps relay control circuit.

Action Taken When the DTC Sets

The BCM will deactivate the low beam PCB relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Headlights/Daytime Running Lights (DRL) Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List

- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between the control circuit terminal 10 and B+.
3. Ignition ON, command the Low Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2580**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC B2580 00**

Headlamp High Beam Control Circuit

Diagnostic Fault Information**DTC B2580**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|----------------------------------|-----------------|----------------------|------------------|--------------------|
| Headlamp High Beam Relay Control | 2 | 1 | B2580 00 | - |

1. Headlamps Inoperative - High Beams
2. Headlamps Always On - Low or High Beams

Circuit/System Description

The high beam headlamps can be controlled by two different inputs to the body control module (BCM), the dimmer switch and the flash to pass switch. When the BCM receives a high beam headlamps ON command, it grounds the headlamp high beam relay control circuit in order to energize the high beam PCB relay. With the relay energized, battery voltage is applied through switch side of the relay, both HI BEAM fuses and the high beam supply voltage circuits to the high beam headlamps.

Conditions for Running the DTC

The high beam headlamps must be commanded ON by the BCM.

Conditions for Setting the DTC

The BCM detects a short to voltage on the low beam headlamps relay control circuit.

Action Taken When the DTC Sets

The BCM will deactivate the high beam PCB relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Headlights/Daytime Running Lights (DRL) Schematics****Connector End View Reference****Lighting Systems Connector End Views****Connector End View Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between the control circuit terminal 19 and B+.
3. Ignition ON, command the High Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2585**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC B2585 00**

Park Lamp Control Circuit

Diagnostic Fault Information**DTC B2585**

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| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| Park Lamp Relay Control | 2 | 1 | B2585 00 | - |
| 1. Park Lamps Inoperative 2. Park Lamps Always On | | | | |

Circuit/System Description

Battery voltage is applied at all times to both the coil and switch sides of the PRK LAMP Relay. When the headlamp switch is placed in the PARK position, ground is applied through the park lamp switch signal circuit to the body control module (BCM). The BCM then applies a ground to the park lamp relay control circuit. This energizes the relay and applies voltage through both park lamp fuses and to all the park lamps.

Conditions for Running the DTC

The park lamps must be commanded on by the BCM.

Conditions for Setting the DTC

The BCM detects a short to voltage on the park lamp relay control circuit while trying to apply a ground to the circuit.

Action Taken When the DTC Sets

The BCM will deactivate the park lamp relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the park lamp relay.
2. Connect a test lamp between B+ and the control circuit terminal 101.
3. Ignition ON, command the Parking Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the park lamp relay.

Component Test**Relay Test**

1. Ignition OFF, disconnect the park lamp relay.
2. Test for 70-100 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 85
 - 30 and 86
 - 30 and 87
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 10A fused jumper wire between relay terminal 85 and B+. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Within an Electrical Center) or Relay Replacement (Attached to Wire Harness)**
- **Control Module References** for BCM replacement, setup and programming

DTC B2590**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC B2590 00**

Left Cornering Lamp Control Circuit

Diagnostic Fault Information**DTC B2590**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| Left Cornering Lamp Control | 2 | 1 | B2590 00 | - |
| 1. Cornering Lamps Inoperative 2. Cornering Lamps Always On | | | | |

Circuit/System Description

Battery voltage is applied at all times to the left front cornering lamp PCB relay which is part of the underhood fuse block. When the turn signal switch is placed in the left turn position, ground is applied through the left turn signal switch signal circuit to the body control module (BCM). The BCM then applies a ground to the left cornering lamp relay control circuit energizing the relay. With the relay energized, battery voltage is applied through the switch side of the relay, the LF CRN LAMP Fuse and the left front cornering lamp supply voltage circuit to the left front cornering lamp.

Conditions for Running the DTC

- The ignition must be ON.
- The park or headlamps must be ON.
- The left turn signal must be ON.
- The cornering lamp must be commanded on by the BCM.

Conditions for Setting the DTC

The BCM detects a short to voltage on the left cornering lamp relay control circuit while trying command the cornering lamp ON.

Action Taken When the DTC Sets

The BCM will deactivate the cornering lamp relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between battery voltage and the control circuit terminal 3.
3. Ignition ON, command the Left Cornering Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - o If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - o If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2595

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B2595 00

Right Cornering Lamp Control Circuit

Diagnostic Fault Information

DTC B2595

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| Right Cornering Lamp Control Circuit | 2 | 1 | B2595 00 | - |
| 1. Cornering Lamps Inoperative 2. Cornering Lamps Always On | | | | |

Circuit/System Description

Battery voltage is applied at all times to the right front cornering lamp PCB relay which is part of the underhood fuse block. When the turn signal switch is placed in the right turn position, ground is applied through the right turn signal switch signal circuit to the body control module (BCM). The BCM then applies a ground to the right cornering lamp relay control circuit energizing the relay. With the relay energized, battery voltage is applied through the switch side of the relay, the RF CRN LAMP Fuse and the right front cornering lamp supply voltage circuit to the right front cornering lamp.

Conditions for Running the DTC

- The ignition must be ON
- The park or headlamps must be ON
- The right turn signal must be ON
- The cornering lamp must be commanded on by the BCM

Conditions for Setting the DTC

The BCM detects a short to voltage on the right cornering lamp relay control circuit while trying to command the cornering lamp ON.

Action Taken When the DTC Sets

The BCM will deactivate the cornering lamp relay for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- [Circuit Testing](#)
- [Connector Repairs](#)

- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between B+ and the control circuit terminal 2.
3. Ignition ON, command the Right Cornering Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the underhood fuse block.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2610**DTC Descriptor****DTC B2610 00**

Passenger Compartment Dimming 1 Circuit

Diagnostic Fault Information

IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

DTC B2610

| | Short to | Open/High | Short to | Signal |
|--|----------|-----------|----------|--------|
|--|----------|-----------|----------|--------|

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| Circuit | Ground | Resistance | Voltage | Performance |
|---------------------------------------|----------|------------|---------|-------------|
| LED Backlighting Dimming Supply | B2652 00 | 2 | 1 | - |
| 1. Interior Backlighting Does Not Dim | | | | |
| 2. Interior Backlighting Inoperative | | | | |

Circuit/System Description

When the interior lamps dimming switch is activated, a variable voltage signal is applied through the instrument panel lamps dimmer switch signal circuit to the body control module (BCM). The BCM then applies a variable voltage signal through the LED backlighting dimming supply circuit to the following components:

- Clock
- Diver Information center (DIC) switch
- Headlamp Switch
- HVAC Control Head
- Rear HVAC Control
- Radio
- Steering Wheel Control Switch

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a ground signal on the LED dimming supply circuit

Action Taken When the DTC Sets

The BCM cease attempt to dim or illuminate the LED lamps.

Conditions for Clearing the DTC

The BCM clears this code from current when the fault is removed from the system.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, cover the ambient light sensor, vary the interior lamp dimming switch from dim to full bright. The LED lamps should dim and then become full bright.

Circuit/System Testing

1. Disconnect all the LED backlighting dimming supply circuit lamps related components. Refer to the circuit/system verification for all components that contain the LED backlighting dimming supply circuit lamps. Verify the DTC B2610 does not set
 - If the DTC resets then test for a short to ground in the LED dimming supply circuit lamps circuit. If the circuit/connections test normal replace the BCM.
2. Reconnect each component one at a time and test for the DTC B2610. If the DTC resets then replace that component.

Repair Procedures

IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- **Driver Information Display Switch Replacement**
- **Headlamp Switch Replacement**
- **Radio Replacement**
- **Steering Wheel Control Switch Assembly Replacement**
- **Control Module References** for BCM replacement, setup and programming

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC B2615 00**

Passenger Compartment Dimming 2 Circuit

Diagnostic Fault Information**DTC B2615**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| B+, BCM C4 Terminal 2 | B2615 00 | B2615 00 | - | - |
| Courtesy Lamps Supply Voltage | B2615 00 | 2 | 1 | - |
| Right Front Turn Signal Lamp Supply Voltage | B2615 00 | 3 | 4 | - |
| 1. Courtesy Lamps Always On 2. Courtesy Lamps Inoperative 3. Right Front Turn Signal Inoperative 4. Right Front Turn Signal Always ON | | | | |

Circuit/System Description

Battery voltage for the courtesy lamps is supplied at all times, from the CTSY/RF TRN Fuse located in the rear fuse block, to the body control module (BCM). When the BCM receives a signal to command the courtesy lamps ON, it then applies voltage through the courtesy lamps supply voltage circuits to the courtesy lamps listed below.

- Left and right roof rail courtesy/reading lamps
- Overhead console lamp

Conditions for Running the DTC

- The BCM attempts to illuminate the courtesy lamps.
- Engine ON, the BCM attempts to illuminate the day time running lamps.

- Ignition ON with the right turn signal switch active, the BCM attempts to illuminate the right front turn signal.

Conditions for Setting the DTC

- The BCM detects a short to ground on the courtesy lamp supply voltage circuit.
- The BCM detects a short to ground on the right front turn signal supply voltage circuit.

Action Taken When the DTC Sets

The BCM will not attempt to activate courtesy lamps or the right front turn signal.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction ignition cycles have occurred.

Reference Information**Schematic Reference****Interior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

Ignition ON, command the Courtesy Lamps ON and OFF with a scan tool. The courtesy lamps should turn ON and OFF when changing between commanded states.

Circuit/System Testing

1. Ignition OFF, disconnect the (C4) harness connector at the BCM.
2. Verify that a test lamp illuminates between the B+ circuit terminal 2 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the supply voltage circuits listed below for a short to ground.
 - Right front turn signal lamp supply voltage terminal 5 C4
 - Courtesy lamp supply voltage terminal 1 C6
 - Courtesy lamp supply voltage terminal 5 C2
3. Ignition OFF, connect the (C4) harness connector to the BCM.
4. Disconnect the harness connectors at all components fed by the supply voltage circuits listed below.
 - Right front turn signal lamp supply voltage terminal 5 C4
 - Courtesy lamp supply voltage terminal 1 C6
 - Courtesy lamp supply voltage terminal 5 C2
5. Ignition ON, clear the DTC with a scan tool.
6. Operate the vehicle within the conditions for running the DTC and verify the DTC does not reset.
 - If the DTC resets, test the supply voltage circuits for a short to ground. If the circuits test normal, replace the BCM.
7. Reconnect each component one at a time and verify that the DTC does not reset.
 - If the DTC resets, test or replace the component responsible for setting the DTC.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Roof Rail Rear Courtesy Lamp Replacement**
- **Overhead Console Reading Lamp and Bulb Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2625**DTC Descriptor****DTC B2625 00**

Display Dimming Pulse Width Modulation (PWM) Output Circuit

Diagnostic Fault Information

IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

DTC B2625

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|-----------------|----------------------|------------------|--------------------|
| LED Indicator Dimming Supply | B2625 00 | 2 | 1 | - |
| 1. Interior Backlighting Does Not Dim 2. Interior Backlighting Inoperative | | | | |

Circuit/System Description

When the interior lamps dimming switch is activated, a variable voltage signal is applied through the instrument panel lamps dimmer switch signal circuit to the body control module (BCM). The BCM then applies a variable voltage signal through the light emitting diode (LED) Indicator dimming supply circuit to the following components:

- Front Parking Display
- Heated Seat Switches
- HVAC Control Heads

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a ground signal on the LED indicator dimming supply circuit

Action Taken When the DTC Sets

The BCM cease attempt to dim or illuminate the LED indicator lamps.

Conditions for Clearing the DTC

The BCM clears this code from current when the fault is removed from the system.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, cover the ambient light sensor, vary the interior lamp dimming switch from dim to full bright. The LED lamps should dim and then become full bright.

Circuit/System Testing

1. Disconnect all the LED indicator dimming supply circuit lamps related components. Refer to the circuit/system verification for all components that contain the LED indicator dimming supply circuit lamps. Verify the DTC B2625 does not set.
 - If the DTC resets then test for a short to ground in the LED indicator dimming supply circuit lamps circuit. If the circuit/connections test normal replace the BCM.
2. Reconnect each component one at a time and test for the DTC B2625. If the DTC resets then replace that component.

Repair Procedures

IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- **Power Seat Switch Replacement**
- **Heated and Cooled Seat Switch Replacement**
- **HVAC Control Module Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2645

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC B2645 03**

Ambient Light Sensor Circuit Below Threshold

DTC B2645 07

Ambient Light Sensor Circuit Above Threshold

Diagnostic Fault Information**DTC B2645**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------------------------------|-----------------|----------------------|------------------|--------------------|
| Ambient Light Sensor Signal Circuit | B2645 03 | B2645 07 | B2645 07 | - |
| Ambient Light Sensor Ground | - | B2645 07 | - | - |

Circuit/System Description

The ambient light sensor is used to monitor outside lighting conditions. The body control module (BCM) provides a 5-volt reference signal to the ambient light sensor. The sensor is a variable resistor, its resistance changes as outside lighting conditions change. With the headlamp switch in the AUTO position, the BCM monitors the sensor signal circuit to determine if the outside lighting conditions are correct for either daytime running lamps (DRL) or headlamp low beam operation. In daylight conditions, the BCM will command the DRLs ON. In low light conditions, the BCM will command the low beam headlamps ON.

Conditions for Running the DTC

- The ignition is ON.
- The headlamp switch in the AUTO position.

Conditions for Setting the DTC**B2645 03**

The DTC will set when the BCM detects the ambient light sensor signal voltage is below 0.196 volts.

B2645 07

The DTC will set when the BCM detects the ambient light sensor signal voltage is above 4.9 volts.

Action Taken When the DTC Sets

The BCM defaults to low light status and commands the low beam headlamps ON.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the ambient light sensor.
2. Ignition OFF, test for less than 5 ohms of resistance between the appropriate low reference circuit listed below and ground.
 - Terminal B with C67
 - Terminal C with CJ2

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- If greater than the specified range, test the low reference circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Ambient Light Sensor parameter is greater than 4.65 volts.
 - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
 4. Install a 3A fused jumper wire between the appropriate signal circuit and the low reference listed below. Verify the scan tool Ambient Light Sensor parameter is less than 0.196 volts.
 - Terminal A and terminal B with C67
 - Terminal D and terminal C with CJ2
 - If greater than the specified range, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
 5. If all circuits test normal, test or replace the ambient light sensor.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Ambient Light Sensor Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B2652

DTC Descriptor

DTC B2652 00

Passenger Compartment Dimming 3

Diagnostic Fault Information

IMPORTANT: Always perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.

DTC B2652

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--------------------------|-----------------|----------------------|------------------|--------------------|
| I/P Lamps Supply Voltage | B2652 00 | 2 | 1 | - |

1. Interior Backlighting Does Not Dim
2. Interior Backlighting Inoperative

Circuit/System Description

Voltage for the interior backlighting components is supplied from the Panel Dimming Fuse in the rear electrical center to the body control module (BCM).

The BCM applies a voltage reference through the instrument panel (I/P) dimming voltage reference circuit to the interior lamp dimming switch, which is part of the headlamp switch. When the dimming switch is placed in the desired position, the dimmed voltage setting is applied from the interior lamp dimming switch through the I/P dimming return circuit to the BCM. The BCM then applies the dimmed voltage to the I/P lamps supply voltage circuit and they dim to the correct level.

The IP lamps are located in the following components:

- Cigar Lighter
- Door Lock Switches
- Headlamp Switch
- Hazard Switch
- I/P Cluster
- Lumbar Switches
- Power Window Switch
- Power Mirror Switches
- Power Seats Switches
- PRNDL
- Sunroof Switch
- Sunshade Switch
- TCS Switch
- Universal Garage Door Opener Switch

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a ground signal on the I/P lamps supply voltage circuit.

Action Taken When the DTC Sets

The I/P lamps are not illuminated

Conditions for Clearing the DTC

The BCM clears this code from current when the fault is removed from the system.

Reference Information**Schematic Reference****Interior Lights Dimming Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, cover the ambient light sensor, vary the interior lamp dimming switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Clear the DTC. Headlamp switch OFF, disconnect all interior lamps dimming related components. Refer to the circuit/system verification for all components that contain the I/P lamps. Verify the DTC B2652 does not set.
 - If the DTC resets then test for a short to ground in the I/P lamps supply voltage circuit. If the circuit/connections test normal replace the BCM.
2. Reconnect each component one at a time and test for the DTC B2652.
 - If the DTC resets, then replace that component.

Repair Procedures

IMPORTANT: Always perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- [Ashtray Lamp Bulb Replacement](#)
- [Headlamp Switch Replacement](#)
- [Hazard Warning Switch Replacement](#)
- [Interior Lamp Switch Replacement](#)
- [Power Seat Switch Replacement](#)
- [Driver Seat Adjuster Memory Switch Replacement](#)
- [Headlamp Switch Replacement](#)
- [Heated and Cooled Seat Switch Replacement](#)
- [Front Seat Lumbar Control Switch Replacement](#)
- [Transmission Floor Shift Control Indicator Lamp Replacement](#)
- [Sunroof Switch Replacement](#)
- [Garage Door Opener Replacement](#)
- [Vanity Mirror Lamp Replacement](#)
- [Driver Information Display Switch Replacement](#)
- [Control Module References](#) for BCM replacement, setup and programming

DTC B3445**Diagnostic Instructions**

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor**DTC B3445 00**

Stop Lamp Circuit

Diagnostic Fault Information**DTC B3445**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|----------------------|-----------------|----------------------|------------------|--------------------|
| CHMSL Voltage Supply | B3445 00 | 1 | 2 | - |
| Ground | - | 1 | - | - |

1. Stop Lamps Inoperative
2. Stop Lamps Always On

Circuit/System Description

Battery voltage is applied at all times to the body control module (BCM) from the CHMSL/BCK-UP Fuse located in the rear fuse block. When the brake pedal is applied and the BCM receives a brake applied signal from the brake pedal position sensor (BPPS). It then applies battery voltage from the CHMSL/BCK-UP fuse through the CHMSL voltage supply circuit to the CHMSL.

Conditions for Running the DTC

The ignition is ON. The stop lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to ground on the CHMSL voltage supply circuit when the stop lamps are being commanded ON.

Action Taken When the DTC Sets

The CHMSL does not illuminate.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the CHMSL.
2. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the supply voltage circuit terminal A and ground.
4. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always ON, test the voltage supply circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the voltage supply circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the CHMSL.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **High Mount Stop Lamp Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B3600**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor**DTC B3600 03**

Voltage Below Threshold

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Diagnostic Fault Information

DTC B3600

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|----------------------|----------------------|------------------|--------------------|
| I/P Dimming Voltage Reference | B1395 03,B3600 03 | B3600 03 | 2 | B1395 07 |
| I/P Dimming Signal | B3600 03 | B3600 03 | 1 | - |
| 1. Interior Backlighting Inoperative 2. Interior Backlighting will not dim | | | | |

Circuit/System Description

The instrument panel (I/P) dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The BCM supplies a voltage reference through the instrument panel (I/P) dimming voltage reference circuit to the interior lamp dimmer switch, which is part of the headlamp switch. When the dimmer switch is placed in a desired brightness position, reference voltage is applied through the dimmer switch rheostat and the I/P lamps dimmer switch signal circuit to the BCM. The BCM interprets this voltage signal, then applies a pulse width modulated (PWM) voltage through the I/P lamps supply voltage circuit and the LED dimming supply circuit to all related interior lamps, illuminating them to the desired level of brightness.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

- The BCM detects a short to ground or open in the I/P dimming voltage reference circuit.
- The BCM detects a short to ground or open in the I/P dimming signal circuit.

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, cover the ambient light sensor, vary the interior lamp dimming switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition ON, test for B+ between the reference voltage circuit terminal 15 and ground.
 - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
3. Verify the scan tool Dimming Control Signal parameter is less than 0.2 volts.
 - If greater than the specified range, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM
4. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool Dimming Control Signal parameter is greater than 2.75 volts.
 - If less than the specified value, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**

- **Control Module References** for BCM replacement, setup and programming

DTC C0277 OR C0890**Diagnostic Instructions**

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors**DTC C0277 06**

Brake Pedal Position Sensor Circuit Short to Ground or Open

DTC C0277 07

Brake Pedal Position Sensor Circuit Voltage Above Threshold

DTC C0277 09

Brake Pedal Position Sensor Circuit Rate of Change Above Threshold

DTC C0277 4B

Brake Pedal Position Sensor Calibration Not Learned

DTC C0890 03

Voltage below threshold

DTC C0890 07

Voltage above threshold

Diagnostic Fault Information**DTC C0277 or C0890**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|----------------------|-----------------|----------------------|------------------|--------------------|
| Brake pedal position | C0277 06 | C0277 06 | C0277 07 | C0277 09 |

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| sensor circuit | | | | C0277 4B |
| Brake pedal position sensor 5-volt reference | C0890 03 | C0890 03 | C0890 07 | C0890 03 C0890 07 |
| Brake pedal position sensor low reference | C0890 03 | C0890 03 | C0890 07 | C0890 03 C0890 07 |

Circuit/System Description

The body control module (BCM) applies a ground through the brake pedal position sensor low reference circuit to the brake pedal position sensor (BPPS). The BCM supplies a 5-volt reference through the brake sensor reference voltage circuit to the BPPS. When the brake pedal is being applied, the BPPS then sends a variable voltage through the brake sensor signal circuit to the BCM.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

C0277 06

The BCM detects an open or a short to ground on the brake pedal position sensor circuit.

C0277 07

The BCM detects short to voltage on the brake pedal position sensor circuit.

C0277 09

The BCM detects the brake pedal position sensor reading is erroneous.

C0277 4B

The BCM detect that the brake pedal position sensor is not calibrated.

C0890 03

The BCM detects a voltage that is lower then 5 volts on the brake pedal position sensor 5-volt reference circuit.

C0890 07

The BCM detects a voltage that is greater then 5 volts on the brake pedal position sensor 5-volt reference circuit

Action Taken When the DTC Sets

The stop lamps will not function correctly.

Conditions for Clearing the DTC

The BCM clears these codes from current when the fault is removed from the system.

Diagnostic Aids

If DTC C0277 4B is set, perform the brake pedal position sensor calibration. If DTC resets then perform the circuit/system testing.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, press and release the brake pedal. The stop lamps should illuminate then go out.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the BPPS.
2. Connect a DMM between the BPPS 5-volt reference circuit and the negative terminal of the battery.
3. Ignition ON, test for 4.7-5.2 volts.
 - If less than 4.7 volts, test the BPPS 5-volt reference circuit for a short to ground or

- an open/high resistance. If the circuit/connections test normal, replace the BCM.
- If greater than 5.2 volts, test the BPPS 5-volt reference circuit for a short to voltage. If the circuit/connections test normal, replace the BCM.
4. Connect a DMM between the BPPS low reference circuit and the negative terminal of the battery.
 5. Ignition ON, test for less than 0.1 volt.
 - If greater than 0.1 volt, test the BPPS low reference circuit for a short to voltage or an open/high resistance. If the circuit/connections test normal, replace the BCM.
 6. Verify the scan tool brake pedal position sensor parameter displays 0 counts.
 - If greater than 0 counts, test the BPPS circuit for a short to voltage. If the circuit/connections test normal, replace the BCM.
 7. Install a 3-amp fused jumper wire between the BPPS circuit and the BPPS 5-volt reference circuit.
 8. Verify the scan tool brake pedal position sensor parameter displays 3 counts.
 - If less than 3 counts, test the BPPS circuit for a short to ground or an open/high resistance. If the circuit/connections test normal, replace the BCM.
 9. If the voltage is correct and all circuits/connections test normal, replace the BPPS.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Brake Pedal Position Sensor Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC C0297

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC C0297 00

Brake Applied Output Circuit

Diagnostic Fault Information

DTC C0297

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--------------|-----------------|----------------------|------------------|--------------------|
| Brake Signal | C0297 00 | - | - | - |

Circuit/System Description

The body control module (BCM) provides a 5-volt reference voltage and a low reference signal to the brake pedal position sensor (BPPS). When the brake pedal is applied, the BPPS sends a variable voltage signal, that will increase as the brake pedal is applied, through the stop lamp switch signal circuit to the BCM. The BCM then applies a signal through the stop lamp switch signal circuit to the engine control module (ECM) and transmission control module (TCM).

Conditions for Running the DTC

- The engine must be ON.
- The brake must be applied.

Conditions for Setting the DTC

The BCM detects a short to ground in the stop lamp switch signal circuit.

Action Taken When the DTC Sets

- The BCM stores the DTC to memory.
- The Service Vehicle Soon indicator is commanded ON.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, press and release the brake pedal. The stop lamps should illuminate then go out.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the control modules for the appropriate engine RPO listed below.
 - L26 - PCM C1 and TAC
 - LD8 - ECM C1 and TCM
2. Connect a test lamp between the appropriate signal circuit terminal listed below and ground.
 - L26 - TAC terminal 6
 - LD8 - TCM terminal 42
3. Engine ON, press and release the brake pedal. The test lamp should turn ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always ON, test the signal circuit for a short to voltage. If the circuit test normal, replace the BCM.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit test normal, replace the BCM.
4. Ignition OFF, connect the at the appropriate TAC or TCM control module.
5. Connect a test lamp between the appropriate signal circuit terminal listed below and ground.
 - L26 - PCM terminal 32 C1
 - LD8 - ECM terminal 77 C1
6. Engine ON, press and release the brake pedal. The test lamp should turn ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit test normal, replace the appropriate TAC or

TCM.

- If all circuit tests normal, replace the appropriate PCM or ECM control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Brake Pedal Position Sensor Replacement**
- **Control Module References** for BCM, PCM, ECM, TCM and TAC replacement, setup and programming

DTC P0572

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P0572

Brake Switch Circuit 1 Low Voltage

Diagnostic Fault Information

DTC P0572

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------------------|-----------------|----------------------|------------------|--------------------|
| Stop Lamp Switch Signal | B3445, P0573 | P0573 | P0572 | - |

Circuit/System Description

When the brake pedal is applied, the BCM receives a brake applied signal from the brake pedal position sensor (BPPS). The BCM applies B+ to the stop lamp switch signal circuit. This circuit supplies a B+ signal to the powertrain control module (PCM) (L26), engine control module (ECM) (LD8), transmission control module (TCM) (LD8) and the throttle actuator control (TAC) module (L26).

Conditions for Running the DTC

The ignition is ON

Conditions for Setting the DTC

The ECM detects a short to ground or an open/high resistance on the stop lamp switch signal circuit while the brakes are applied

Action Taken When the DTC Sets

- Stop lamp switch input is ignored. Brake apply status is obtained through serial data messages.
- Cruise control is disabled

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Description and Operation****Exterior Lighting Systems Description and Operation****Electrical Information Reference**

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Circuit/System Verification

Ignition ON, depress the brake pedal. The stop lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the C1 harness connector at the ECM.
2. Connect a test lamp between the signal circuit terminal 7 and ground.

3. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when pressing and releasing the brake pedal.
 - o If the test lamp is always ON, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - o If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, replace the ECM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for BCM or ECM replacement, setup and programming

DTC P0573

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P0573

Brake Switch Circuit 1 High Voltage

Diagnostic Fault Information

DTC P0573

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------------------|-----------------|----------------------|------------------|--------------------|
| Stop Lamp Switch Signal | B3445, P0573 | P0573 | P0572 | - |

Circuit/System Description

When the brake pedal is applied, the BCM receives a brake applied signal from the brake pedal position sensor (BPPS). The BCM applies B+ to the stop lamp switch signal circuit. This circuit supplies a B+ signal to the powertrain control module (PCM) (V6), engine control module (ECM) (V8), transmission control module (TCM) (V8), throttle actuator control (TAC) module (V6) and electronic brake control module (EBCM) indicating the brakes are

applied. B+ is also supplied to the center high mound stop lamp (CHMSL), illuminating it when the brakes are depressed.

Conditions for Running the DTC

The ignition is ON

Conditions for Setting the DTC

The ECM detects a short to voltage on the stop lamp switch signal circuit while the brakes are not applied

Action Taken When the DTC Sets

- Stop lamp switch input is ignored. Brake apply status is obtained through serial data messages.
- Cruise control is disabled

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Description and Operation****Exterior Lighting Systems Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Circuit/System Verification

Ignition ON, depress the brake pedal. The stop lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the C1 harness connector at the ECM.
2. Connect a test lamp between the signal circuit terminal 7 and ground.
3. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when pressing and releasing the brake pedal.
 - If the test lamp is always ON, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, replace the ECM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for BCM or ECM replacement, setup and programming

SYMPTOMS - LIGHTING SYSTEMS

IMPORTANT: The following steps must be completed before doing the Symptom tables.

1. Perform the **Diagnostic System Check - Vehicle**.
 - No DTCs are set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions.
Refer to the following:
 - **Exterior Lighting Systems Description and Operation**
 - **Interior Lighting Systems Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the lighting system.
Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Backup Lamps Malfunction**
- **Cornering Lamps Malfunction**
- **Courtesy Lamps Malfunction**
- **Daytime Running Lamps Malfunction**
- **Front Fog Lamps Malfunction**
- **Hazard Lamps Malfunction**
- **Headlamps Malfunction**
- **Interior Backlighting Malfunction**
- **Park, License, and/or Tail Lamps Malfunction**
- **Stop Lamps Malfunction**
- **Turn Signal Lamps and/or Indicators Malfunction**

BACKUP LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Backup Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-----------------------------|-----------------|----------------------|------------------|--------------------|
| Backup Lamps Voltage Supply | B2545 00 | 1 | 1 | - |
| 1. Backup Lamps Inoperative | | | | |

Circuit/System Description

When the PRNDL is placed in the REVERSE position, a GMLAN signal is sent from the transmission control module (TCM) to the body control module (BCM). The BCM then

applies voltage through the backup lamps voltage supply circuit to the tail lamp assemblies illuminating the backup lamps.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, place the PRNDL in the REVERSE position. The backup lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate tail lamp assembly.
2. Test for less than 5.0 ohms of resistance between the ground circuit terminal 3 and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the supply voltage circuit terminal 1 and the ground circuit terminal 3.
4. Ignition ON, cycle the PRNDL between the PARK and REVERSE positions. The test lamp should turn ON and OFF when changing between park and reverse.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the body control module.

- If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the body control module.

5. If all circuits test normal, test or replace the appropriate component.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Tail Lamp Replacement**
- **Control Module References** for BCM replacement, setup and programming

CORNERING LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Cornering Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|------------------------|-----------------------------|-------------------------|---------------------------|
| Left Cornering Lamp Supply Voltage | 1 | 1 | 2 | - |
| Right Cornering Lamp Supply Voltage | 1 | 1 | 2 | - |
| Left Cornering Lamp Relay Control | 2 | 1 | B2590 00 | - |
| Right Cornering Lamp Relay Control | 2 | 1 | B2595 00 | - |
| Left Cornering Lamp Ground | - | 1 | - | - |
| Right Cornering Lamp Ground | - | 1 | - | - |
| 1. Cornering Lamps Inoperative 2. Cornering Lamps Always On | | | | |

Battery voltage is applied at all times to both front cornering lamp PCB relays which are an internal part of the underhood fuse block. When the turn signal switch is activated, ground is applied through the turn signal switch signal circuit to the body control module (BCM). The BCM then applies a ground to the appropriate cornering lamp relay control circuit energizing the relay. With the relay energized, battery voltage is applied through the switch side of the relay, the LT or RT CRN LAMP Fuse and the cornering lamp supply voltage circuit to the cornering lamp.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, operate the left and right turn signal and observe the related cornering lamp. The cornering lamp should illuminate as long as the turn signal is ON.

Circuit/System Testing

1. Ignition ON, park or headlamps ON, place the turn signal switch in the direction of the inoperative cornering lamp.
2. With a test lamp connected to ground, probe each of the test points on the appropriate CRN LAMP Fuse. The test lamp should illuminate at one or both of the fuse test points.
 - If the test lamp does not illuminate at either test point or remains illuminated at all times with the turn signal OFF, refer to **Corner Lamp PCB Relay Circuit Test**.

- If the test lamp illuminates, refer to Cornering Lamp Circuit Test.

Corner Lamp PCB Relay Circuit Test

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between battery voltage and the appropriate control circuit terminal listed below.
 - Left cornering lamp relay control terminal 3
 - Right cornering lamp relay control terminal 2
3. Ignition ON, park or headlamps ON, operate the turn signal switch ON and OFF. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If the circuit tests normal, replace the underhood fuse block.

Cornering Lamp Circuit Test

1. Ignition OFF, disconnect the harness connector at the inoperative cornering lamp/headlamp assembly.
2. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal E and ground.
 - If greater than the specified range, test the ground circuit for and open/high resistance.
3. Connect a test lamp between the supply voltage circuit terminal A and ground.
4. Ignition ON, park or headlamps ON, operate the turn signal switch ON and OFF, The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, test or replace the underhood fuse block.
5. If all circuits test normal, test or replace the cornering lamp bulb.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Headlamp Replacement
- Underhood Electrical Center or Junction Block Replacement

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- **Control Module References** for BCM replacement, setup and programming

COURTESY LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Courtesy Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|-----------------|----------------------|------------------|--------------------|
| B+, BCM C4 Terminal 2 | B2615 00, 1 | B2615 00, 1 | - | - |
| B+, BCM C3 Terminal 2 | 6, 7 | 6, 7 | - | - |
| Courtesy Lamp Supply Voltage | B2615 00 | 1 | - | - |
| Inadvertent Power Courtesy Lamp | B1480 00, 6 | 6 | - | - |
| Courtesy Lamp Switch ON Signal | 3 | 3 | 1 | - |
| Left Front Door Open Switch Signal | 4 | 4 | - | - |
| Rear Door Open Switch Signal | 5 | 5 | - | - |
| Right Front Door Open Switch Signal | 4 | 4 | - | - |
| Door lock Low Reference - Left Front | - | 4 | - | - |
| Door lock Low Reference - Right Front | - | 4 | - | - |
| Courtesy Lamp Ground - Left Front Footwell | - | 2 | - | - |
| Courtesy Lamp Ground - Right Front Footwell | - | 2 | - | - |
| Door lock Ground - Left Rear | - | 5 | - | - |
| Door lock Ground - Right | - | 5 | - | - |

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| Rear | | | | |
|---|---|------|---|---|
| Inadvertent Courtesy Lamps Ground | - | 1, 6 | - | - |
| Overhead Console Lamp Ground | - | 1, 6 | - | - |
| Roof Rail Reading Lamp Ground - Left | - | 1, 6 | - | - |
| Roof Rail Reading Lamp Ground - Left | - | 1 | - | - |
| 1. Overhead Console Courtesy/Reading Lamps Malfunction 2. Footwell Courtesy Lamps Malfunction 3. Dome Lamp Switch Malfunction 4. Door Open Switch Malfunction-Front 5. Door Open Switch Malfunction-Rear 6. Inadvertent Power Courtesy Lamps Malfunction 7. Interior Backlighting Malfunction | | | | |

Circuit/System Description

The BCM receives battery voltage from the CTSY/RF TRN fuse in order to supply power to the courtesy lamps. The BCM applies this voltage to the courtesy lamps through the courtesy lamp supply voltage circuits. When any door is opened, the door open switch contacts close and the BCM receives a door-open signal. If the BCM receives a door lock or unlock signal, the BCM will activate the courtesy lamp supply voltage circuit, providing battery voltage to the dome lamps and the left and right footwell courtesy lamps. The courtesy lamps can be manually activated by placing the interior lamp switch in the DOME position. For more detailed information concerning courtesy lamp operation refer to [Interior Lighting Systems Description and Operation](#).

The BCM receives battery voltage from the INT LAMPS fuse in order to supply power to the inadvertent courtesy lamps. Inadvertent power courtesy lamp feature provides a similar function for the interior lamps as a retained accessory power feature. The BCM will energize the courtesy lamps supply voltage circuit when the BCM is in the active state (awake). When the inadvertent power courtesy lamps supply voltage circuit is energized, it supplies voltage to all the interior lights listed below. The BCM will continue to supply voltage to the interior lamps after the ignition is turned OFF so that the interior lamps may be operated.

- Overhead Console Reading Lamps
- Roof Rail Reading Lamps
- Vanity Mirror Lamps

- I/P Compartment Lamp
- Rear Compartment Courtesy Lamp

In the event that any of these lamps were to remain illuminated for a period of more than 20 minutes with the ignition switch in the OFF position and no BCM input activity, the BCM will deactivate the inadvertent power supply voltage circuit to prevent a total battery discharge condition.

Reference Information**Schematic Reference****Interior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON and all doors closed, observe the scan tool Ctsy. Lamp Actv. Reason parameter while turning the dome lamp switch ON and OFF. The reading should change between OFF and MANUAL.
 - If the Ctsy. Lamp Actv. Reason parameter does not change between OFF and MANUAL, refer to **Dome Lamp Switch Test**.
2. Observe the scan tool Driver Door Open Sw. parameter while opening and closing the driver door. The reading should change between Open and Closed.
 - If the Driver Door Open Sw. parameter does not change between Open and Closed, refer to **Door Open Switch Test - Front**.
3. Observe the scan tool Passenger Door Open Sw. parameter while opening and closing

the front passenger door. The reading should change between Open and Closed.

- If the Passenger Door Open Sw. parameter does not change between Open and Closed, refer to **Door Open Switch Test - Front**.
4. Open each rear door one at a time and observe the courtesy lamps. The courtesy lamps should illuminate when each rear door is opened.
 - If the courtesy lamps do not illuminate, refer to **Door Open Switch Test - Rear**.
 5. If all scan tool parameters test normal, refer to the appropriate diagnostic procedure listed below.
 - Courtesy Lamp Circuit Test
 - Inadvertent Power Courtesy Lamp Circuit Test

Circuit/System Testing

Dome Lamp Switch Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, all doors closed, verify the scan tool Ctsy. Lamp Actv. Reason parameter is OFF or Door Closed.
 - If not the specified value, test the signal circuit terminal 12 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 12 and ground. Verify the scan tool Ctsy. Lamp Actv. Reason parameter is MANUAL.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

Door Open Switch Test - Front

1. Ignition OFF, disconnect the harness connector at the inoperative driver door lock assembly.
2. Verify that a test lamp illuminates between the appropriate low reference circuit terminal listed below and B+.
 - Left Front Door Lock terminal 4
 - Right Front Door Lock terminal 1
 - If the test lamp does not illuminate, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the door control module
3. Ignition ON, verify the appropriate scan tool Door Switch Door Open Sw. parameter is

Inactive.

- If not the specified value, test the appropriate signal circuit listed below for a short to ground. If the circuit tests normal, replace the appropriate door control module.
 - Left Front Door Lock terminal 1
 - Right Front Door Lock terminal 4
4. Install a 3A fused jumper wire between the appropriate signal circuit terminal listed below and ground. Verify the appropriate scan tool Door Switch Door Open Sw. parameter is Open.
- Left Front Door Lock terminal 1
 - Right Front Door Lock terminal 4
- If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door control module.
5. If all circuits test normal, test or replace the inoperative door lock assembly.

Door Open Switch Test - Rear

1. Ignition OFF, disconnect the harness connector at the inoperative rear door lock assembly.
2. Test for less than 5.0 ohms of resistance between the appropriate ground circuit terminal listed below and ground.
 - Left Rear Door Lock terminal 4
 - Right Rear Door Lock terminal 1
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, all doors closed, verify the scan tool BCM Ctsy. Lamp Actv. Reason. parameter is Door Closed.
 - If not the specified value, test the appropriate signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - Left Rear Door Lock terminal 1
 - Right Rear Door Lock terminal 4
4. Install a 3A fused jumper wire between the appropriate signal circuit terminal listed below and ground. Verify the scan tool BCM Ctsy. Lamp Actv. Reason parameter is Door Open.
 - Left Rear Door Lock terminal 1
 - Right Rear Door Lock terminal 4
 - If not the specified value, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the appropriate door lock assembly.

Courtesy Lamp Circuit Test

1. Ignition OFF, disconnect the (C3, C4) harness connectors at the BCM.
2. Verify that a test lamp illuminates between B+ circuits listed below and ground.
 - Terminal 2 C3
 - Terminal 2 C4
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the related courtesy lamp supply voltage circuits for a short to ground.
3. Ignition OFF, connect the BCM harness connectors.
4. Disconnect the harness connector at the inoperative courtesy lamp lamp.
5. Test for less than 5.0 ohms of resistance between the appropriate ground circuit terminal listed below and ground.
 - Left or Right Roof Rail Reading Lamp terminal B
 - Overhead Console Lamp terminal A
 - Left or Right Footwell Courtesy Lamp terminal B
 - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Connect a test lamp between the appropriate supply voltage circuit terminal listed below and ground.
 - Left or Right Roof Rail Reading Lamp terminal A
 - Overhead Console Lamp terminal B
 - Left or Right Footwell Courtesy Lamp terminal A
7. Command the Courtesy Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
8. If all circuits test normal, test or replace the courtesy lamp bulb.

Inadvertent Power Courtesy Lamps Circuit Test

1. Ignition OFF, disconnect the (C3) harness connector at the BCM.
2. Verify that a test lamp illuminates between the B+ circuit terminal 2 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the inadvertent power courtesy lamp circuit for a short to ground.
3. Ignition OFF, connect the harness connector at the BCM.

4. Disconnect the harness connector at the inoperative lamp.
5. Test for less than 5.0 ohms of resistance between the appropriate ground circuit terminal listed below and ground.
 - Rear Compartment Courtesy Lamp terminal B
 - LF or RF Vanity Mirror terminal B
 - Left or Right Roof Rail Reading Lamp terminal B
 - I/P Compartment Lamp terminal B
 - Overhead Console Lamp terminal A
 - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Ignition ON, verify that a test lamp illuminates between the inadvertent power courtesy lamp circuit terminal and ground.
 - Rear Compartment Courtesy Lamp terminal C
 - LF or RF Vanity Mirror terminal A
 - Left or Right Roof Rail Reading Lamp terminal C
 - I/P Compartment Lamp terminal A
 - Overhead Console Lamp terminal C
 - If the test lamp does not illuminate, test the inadvertent power courtesy lamp circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
7. If all circuits test normal, replace the inoperative lamp.

Component Testing**Door Open Switch Test**

1. Ignition OFF, remove the appropriate door lock actuator.
2. Test for infinite resistance between the appropriate signal and low reference terminals listed below with the switch in the open position.
 - Driver door - signal terminal 1 and low reference terminal 4
 - Passenger door - signal terminal 4 and low reference terminal 1
 - Left rear door - signal terminal 1 and ground terminal 4
 - Right rear door - signal terminal 4 and ground terminal 1
 - If not the specified value, replace the appropriate door lock actuator.
3. Test for less than 2 ohms between the appropriate signal and ground terminals listed below with the switch in the closed position.
 - Driver door - signal terminal 1 and low reference terminal 4
 - Passenger door - signal terminal 4 and lo reference terminal 1

- Left rear door - signal terminal 1 and ground terminal 4
- Right rear door - signal terminal 4 and ground terminal 1
- If greater than the specified range, replace the appropriate door lock actuator.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Reading Lamp Bulb Replacement**
- **Instrument Panel Courtesy Lamp Bulb Replacement**
- **Overhead Console Reading Lamp and Bulb Replacement**
- **Instrument Panel Compartment Lamp Switch Replacement**
- **Roof Rail Rear Courtesy Lamp Switch Replacement**
- **Roof Rail Rear Courtesy Lamp Replacement**
- **Vanity Mirror Lamp Replacement**
- **Rear Compartment Courtesy Lamp Replacement**
- **Front Side Door Lock Replacement**
- **Rear Side Door Lock Replacement**
- **Control Module References** for BCM replacement, setup and programming

DAYTIME RUNNING LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Daytime Running Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|------------------------------------|-----------------|----------------------|------------------|--------------------|
| Ambient Light Sensor Signal | B2645 03 | B2645 07 | B2645 07 | - |
| Ambient Light Sensor Low Reference | - | B2645 07 | - | - |
| Low Beam Headlamps | | | | |

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| | | | | |
|--|------|------|---|---|
| Supply Voltage | 3 | 1 | 2 | - |
| Left Headlamp Low Beam Voltage Supply | 2, 3 | 2, 3 | 4 | - |
| Right Headlamp Low Beam Voltage Supply | 2, 3 | 2, 3 | 4 | - |
| DRL Relay Control | 2 | 1 | 1 | - |
| Left Headlamp Low Beam Ground | - | 3 | - | - |
| Right Headlamp Low Beam ground | - | 3 | - | - |

1. Daytime Running Lamps (DRL) Inoperative
2. Daytime Running Lamps (DRL) Always ON
3. Low Beam Headlamp Inoperative
4. Low Beam Headlamp Always ON

Circuit/System Description

The ambient light sensor is a light sensitive transistor that varies the voltage signal to the body control module (BCM) based on outside lighting conditions. When the ambient light sensor indicates daytime conditions with engine running, the body control module (BCM) grounds the DRL relay control circuit, energizing the DRL relay. With the DRL relay energized, voltage is applied through the relay switch contacts, the DRL 1 fuse and the DRL 2 fuse to the left and right low beam headlamps. Any function or condition that turns the headlamps ON will cancel DRL operation.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, observe the scan tool Ambient Light Sensor parameter voltage while carefully supplying sufficient light to simulate daylight conditions to the ambient light sensor. The voltage reading should be approximately 2-3.5 volts.

Circuit/System Testing

1. Ignition OFF, disconnect the DRL Relay from the rear fuse block.
2. Ignition ON, headlamps OFF, verify that a test lamp does not illuminate between the supply voltage circuit terminal 94 and ground.
 - If the test lamp illuminates, test the low beam supply voltage circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal 90 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Verify that a test lamp illuminates between the B+ circuit terminal 93 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance.
5. Connect a test lamp between the B+ circuit terminal 90 and the control circuit terminal 92.
6. Command the DRL ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
7. Headlamps OFF, connect a 3A fused jumper wire between the B+ circuit terminal 93 and the supply voltage circuit terminal 92. The low beam headlamps should illuminate.
 - If the headlamps do not illuminate, test the supply voltage circuit for an open/high resistance. If the circuit tests normal, test or replace the DRL fuse or the rear fuse block.
8. If all circuits test normal, test or replace the DRL relay.

Component Test**Relay Test**

1. Ignition OFF, disconnect the DRL relay.
2. Test for 70-100 ohms of resistance between terminals 85 and 86.
 - o If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 85
 - 30 and 86
 - 30 and 87
 - 85 and 87
 - o If not the specified value, replace the relay.
4. Install a 10A fused jumper wire between relay terminal 85 and B+. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - o If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement** .
- **Control Module References** for BCM replacement, setup and programming

FRONT FOG LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Front Fog Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-------------------------------------|-----------------|----------------------|------------------|--------------------|
| Left Front Fog Lamp Supply Voltage | 2 | 2 | 1 | - |
| Right Front Fog Lamp Supply Voltage | 4 | 4 | 3 | - |
| Front Fog Lamp Switch Signal | 2, 4 | 2, 4 | 1, 3 | - |

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|--|------|------|-------------------|---|
| Fog Lamp Relay Control | 1, 3 | 2, 4 | B2530 00, 1, 3 | - |
| Headlamp Switch Ground | - | 1, 3 | - | - |
| Left Front Left Fog Lamp Ground | - | 2 | - | - |
| Right Front Fog Lamp Ground | - | 4 | - | - |
| <ol style="list-style-type: none">1. Left Fog Lamp Always ON2. Left Front Fog Lamp Inoperative3. Right Fog Lamps Always ON4. Right Front Fog Lamp Inoperative | | | | |

Circuit/System Description

The body control module (BCM) controls the fog lamps based on inputs from the fog lamp switch. When the fog lamp switch is pressed, a ground path is provided on the front fog lamp switch signal circuit to the BCM, indicating the front fog lamps ON command. In response to this signal, the BCM grounds the fog lamp relay control circuit energizing the FOG LAMP PCB Relay. With the fog lamp relay energized, battery voltage is applied through the FOG Fuse and the fog lamp supply voltage circuits illuminating the front fog lamps.

When a fog lamp request is seen by the BCM, a serial data message is sent to the instrument panel cluster (IPC) requesting the fog lamp indicator be illuminated.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Description and Operation

Exterior Lighting Systems Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections

• Wiring Repairs

Scan Tool Reference

- Scan Tool Data List
- Scan Tool Data Definitions
- Scan Tool Output Controls

Circuit/System Verification

1. Observe the scan tool Front Fog Lamps Switch parameter while pressing and releasing the fog lamp switch. The parameter should cycle between Active and Inactive.
 - If the parameter does cycle between the specified values, refer to Fog Lamp Switch Circuit Test.
2. With a test lamp connected to ground, probe each of the test points on the FOG Fuse while commanding the Fog Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF at one or both of the fuse test points when changing between commanded states.
 - If the test lamp is always OFF or remains always ON, refer to Fog Lamp PCB Relay Circuit Test.
 - If the test lamp turns ON and OFF, refer to Fog Lamps Circuit Test.
3. With the fog lamps ON, verify the fog lamp indicator is illuminated on the IPC.
 - If the indicator does not illuminate, refer to Front Fog Lamp Indicator Test.

Circuit/System Testing

Fog Lamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Front Fog Lamp Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal 6 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 6 and the ground circuit terminal 8. Verify the scan tool Front Fog Lamp Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

Fog Lamp PCB Relay Circuit Test

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between B+ and the control circuit terminal 23.
3. Ignition ON, command the Fog Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - o If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - o If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, replace the underhood fuse block.

Fog Lamps Circuit Test

1. Ignition OFF, disconnect the harness connector at the inoperative fog lamp.
2. Test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - o If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the supply voltage circuit terminal A and ground.
4. Ignition ON, command the Fog Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - o If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
 - o If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse block.
5. If all circuits test normal, test or replace the inoperative fog lamp bulb.

Front Fog Lamp Indicator Test

1. Ignition ON, with a scan tool perform the display test for the instrument panel cluster (IPC) and observe the front fog lamp indicator.
 - o If the front fog lamp indicator illuminates during the test, replace the BCM.
 - o If the front fog lamp indicator does not illuminate during the test or remains illuminated at all times, replace the IPC.

Component Testing**Headlamp Switch**

1. Ignition OFF, disconnect the harness connector at the headlamp switch.

2. Test for infinite resistance between the signal circuit terminal 6 and the ground circuit terminal 8 with the switch in the open position.
 - o If not the specified value, replace the headlamp switch.
3. Test for less than 2.0 ohms of resistance between the signal circuit terminal 6 and the ground circuit terminal 8 with the switch in the closed position.
 - o If greater than the specified range, replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Front Fog Lamp Bulb Replacement**
- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming

HAZARD LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Hazard Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-----------------------------|-----------------|----------------------|------------------|--------------------|
| Hazard Switch Signal | 2 | 1 | 1 | - |
| Hazard Switch Ground | - | 1 | - | - |
| 1. Hazard Lamps Inoperative | | | | |
| 2. Hazard Lamps Always On | | | | |

Circuit/System Description

The hazard flashers may be activated in any power mode. The hazard switch is permanently grounded through G300. When the hazard switch is placed in the ON position, ground is applied through the hazard switch signal circuit to the body control module (BCM). The BCM supplies battery voltage to all four turn signal lamps in an ON and OFF duty cycle. When the hazard switch is activated, the BCM sends a GMLAN serial data message to the instrument

panel cluster (IPC) requesting both turn signal indicators to be cycled ON and OFF.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Description and Operation

Exterior Lighting Systems Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Data List**
- **Scan Tool Data Definitions**
- **Scan Tool Output Controls**

Circuit/System Verification

1. Ignition ON, individually operate both the left and right turn signals. All applicable lamps should flash when in each turn signal position.
 - If any of the lamps do not flash, refer to **Turn Signal Lamps and/or Indicators Malfunction**.
2. Observe the scan tool Hazard Lamp Switch parameter while cycling the hazard switch. The parameter should change between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Circuit/System Testing**.
3. Press the hazard switch. All applicable lamps should flash.
 - If one or more lamps do not flash, replace the BCM.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the hazard switch.
2. Test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - o If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Hazard Lamp Switch parameter is Inactive.
 - o If not the specified value, test the signal circuit terminal C for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal C and the ground circuit terminal B. Verify the scan tool Hazard Lamp Switch parameter is Active.
 - o If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the hazard switch.

Component Testing

Hazard Switch

1. Ignition OFF, disconnect the harness connector at the hazard switch.
2. Test for infinite resistance between the signal circuit terminal C and the ground circuit terminal B with the switch in the open position.
 - o If not the specified value, replace the hazard switch.
3. Test for less than 2.0 ohms of resistance between the signal circuit terminal C and the ground circuit terminal B with the switch in the closed position.
 - o If greater than the specified range, replace the hazard switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Hazard Warning Switch Replacement**
- **Control Module References** for BCM replacement, setup and programming

HEADLAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category

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Diagnostic Fault Information**Headlamps Malfunction**

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|------------------------|-----------------------------|-------------------------|---------------------------|
| Low Beam Headlamp Supply Voltage | 1 | 1 | 3 | - |
| High Beam Headlamp Supply Voltage | 2 | 2 | 4 | - |
| Headlamp Low Beam Relay Control | 1 | 1 | B2575 00 | - |
| Headlamp High Beam Relay Control | 2 | 2 | B2580 00 | - |
| Headlamp Switch Headlamps Off Signal | B257A 00 | 6 | 6 | - |
| Headlamp Switch Headlamps On Signal | B257A 00 | 1 | 1 | - |
| Flash to Pass Switch Signal | 4 | 5 | 5 | - |
| Headlamp Dimmer Switch High Beam Signal | 4 | 2 | 2 | - |
| Low Beam Headlamp Ground | - | 1 | 1 | - |
| High Beam Headlamp Ground | - | 2 | 2 | - |
| Headlamp Switch Ground | - | 1, 2 | 1, 2 | - |
| Turn Signal/Multifunction Switch Ground | - | 2, 5 | 2, 5 | - |

1. Low Beam Headlamp(s) Inoperative
2. High Beam Headlamp(s) Inoperative
3. Low Beam Headlamp(s) Always On
4. High Beam Headlamp(s) Always On
5. Flash to Pass Inoperative
6. Headlamp Defeat Inoperative

Circuit/System Description

The vehicle headlamps are controlled by the body control module (BCM) based on inputs from the headlamp switch and the turn signal/multifunction switch. The headlamp switch has four positions: Off, Auto, Park and Headlamps. The default headlamp switch position is Auto, in which the BCM uses the ambient light sensor to determine when headlamps are needed. The Off portion of the headlamp switch is a momentary switch which overrides the automatic headlamps and will turn off the vehicle headlamps. When in the Off position, the headlamp switch grounds the headlamp switch headlamps off signal circuit, prompting the BCM to turn off the headlamps. The Park position of the headlamp switch will only illuminate the vehicle parking lamps. The Headlamp position of the headlamp switch will illuminate both the parking lamps, as well as the headlamps. With the headlamp switch in the Headlamp position, the headlamp switch headlamps on signal circuit is grounded, prompting the BCM to turn on the headlamps, regardless of other factors such as ambient light.

The headlamp high beams are controlled through the flash to pass switch and the headlamp dimmer switch, both located in the turn signal/multifunction switch. The flash to pass switch is a momentary type switch, designed to illuminate the high beams as long as the switch is held. With the switch closed, the flash to pass switch signal circuit is grounded, prompting the BCM to turn on the high beam lamps. The headlamp dimmer switch allows the operator to select between full time high or low beam operation. Unlike the flash to pass switch, it is not a momentary switch. When the headlamp dimmer switch is in the high beam position, the headlamp dimmer switch high beam signal circuit is grounded. This prompts the BCM to turn on the high beam lamps.

The BCM controls the headlamps based on the inputs explained above. When a low beam request is received, the BCM grounds the headlamp low beam relay control circuit. This energizes the coil in the LO BEAM PCB Relay, causing the relay switch to close. This then applies B+ to both low beam headlamps through the LT LO BEAM and RT LO BEAM fuses, illuminating the low beam headlamps. When a high beam request is received, the BCM grounds the headlamp high beam relay control circuit. This energizes the coil in the HIGH BEAM PCB Relay, causing the relay switch to close. This then applies B+ through both HI BEAM fuses and the high beam headlamp supply voltage circuits, illuminating the high beam headlamps.

Reference Information**Schematic Reference****Headlights/Daytime Running Lights (DRL) Schematics****Connector End View Reference****Lighting Systems Connector End Views****Description and Operation**

Exterior Lighting Systems Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the scan tool BCM Auto Hdlp. Disable Sw. parameter while cycling the headlamp switch between the Auto and Off positions. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Headlamp Switch Test**.
2. Observe the scan tool BCM Headlamp Switch parameter while cycling the headlamp switch between the Auto and Head position. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Headlamp Switch Test**.
3. With the headlamps ON, observe the scan tool BCM Flash to Pass Switch parameter while pulling and releasing the flash to pass switch. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Turn Signal/Multifunction Switch Test**.
4. With the headlamps ON, observe the scan tool BCM High Beam Select Switch parameter while switching the headlamp dimmer switch between the low and high beam positions. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Turn Signal/Multifunction Switch Test**.
5. Command the Low Beams ON and OFF with a scan tool. Verify the low beam headlamps turn ON and OFF.
 - If the low beam headlamps do not cycle between the commanded states, refer to **Low Beam Headlamp Circuit Test**.

6. Command the High Beams ON and OFF with a scan tool. Verify the high beam headlamps turn ON and OFF.
 - If the high beam headlamps do not cycle between the commanded states, refer to **High Beam Headlamp Circuit Test**.
7. Ignition ON, headlamps ON, observe the high beam indicator on the IPC while cycling the high beam dimmer switch ON and OFF. The indicator should turn ON and OFF when changing between commanded states.
 - If the indicator is always OFF or remains always ON, replace the IPC.

Circuit/System Testing**Headlamp Switch Test**

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Headlamp Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal 1 for a short to ground. If the circuit tests normal, replace the BCM.
4. Verify the scan tool Auto Hdlp. Disable Sw. parameter is Inactive.
 - If not the specified value, test the signal circuit terminal 3 for a short to ground. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 1 and ground. Verify the scan tool Headlamp Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
6. Install a 3A fused jumper wire between the signal circuit terminal 3 and ground. Verify the scan tool Auto Hdlp. Disable Sw. parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
7. If all circuits test normal, test or replace the headlamp switch.

Turn Signal/Multifunction Switch Test

1. Ignition OFF, disconnect the (C2) harness connector at the turn signal/multifunction switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal D and B+.

- If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Flash to Pass Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the BCM.
 4. Verify the scan tool High Beam Select Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal E for a short to ground. If the circuit tests normal, replace the BCM.
 5. Install a 3A fused jumper wire between the signal circuit terminal A and ground. Verify the scan tool Flash to Pass Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
 6. Install a 3A fused jumper wire between the signal circuit terminal E and ground. Verify the scan tool High Beam Select Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or and open/high resistance. If the circuit tests normal, replace the BCM.
 7. If all circuits test normal, test or replace the turn signal/multifunction switch.

Low Beam Headlamp Circuit Test

1. Ignition OFF, remove the DRL relay from the rear fuse block.
2. Ignition ON, headlamps OFF, verify that a test lamp does not illuminate between the control circuit terminal 92 and ground.
 - If the test lamp illuminates, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
3. Ignition OFF, install the DRL relay. Disconnect the (C1) harness connector at the underhood fuse block.
4. Ignition ON, headlamps OFF, verify that a test lamp does not illuminate between the supply voltage circuit terminal 3 and ground.
 - If the test lamp illuminates, test the supply voltage circuit for a short to B+. If the circuit tests normal, test or replace the DRL relay.
5. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
6. Connect a test lamp between the control circuit terminal 10 and B+.
7. Ignition ON, command the Low Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.

8. Ignition OFF, connect the (C1, C2) harness connectors at the underhood fuse block. Disconnect the harness connector at the inoperative low beam headlamp bulb.
9. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
10. Connect a test lamp between the supply voltage circuit terminal A and ground.
11. Ignition ON, command the Low Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse block.
12. If all circuits test normal, test or replace the inoperative low beam headlamp bulb.

High Beam Headlamp Circuit Test

1. Ignition OFF, disconnect the (C2) harness connector at the underhood fuse block.
2. Connect a test lamp between the control circuit terminal 19 and B+.
3. Ignition ON, command the High Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
4. Ignition OFF, connect the harness connector at the underhood fuse block. Disconnect the harness connector at the Inoperative high beam headlamp bulb.
5. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground,
 - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Connect a test lamp between the supply voltage circuit terminal A ground ground.
7. Ignition ON, command the High Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse

block.

8. If all circuits test normal, test or replace the inoperative high beam headlamp bulb.

Component Testing

Headlamp Switch

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for infinite resistance between the signal terminal 3 and the ground terminal 8 with the switch in the Auto position.
 - o If not the specified value, replace the headlamp switch.
3. Test for infinite resistance between the signal terminal 1 and the ground terminal 8 with the switch in the Auto position.
 - o If not the specified value, replace the headlamp switch.
4. Test for less than 2.0 ohms of resistance between the signal terminal 3 and the ground terminal 8 with the switch in the Off position.
 - o If not the specified value, replace the headlamp switch.
5. Test for less than 2.0 ohms of resistance between the signal terminal 1 and the ground terminal 8 with the switch in the Headlamp position.
 - o If not the specified value, replace the headlamp switch.

Turn Signal/Multifunction Switch

1. Ignition OFF, disconnect the (C2) harness connector at the turn signal/multifunction switch.
2. Test for infinite resistance between the signal terminal A and the ground terminal D with the flash to pass switch in the open position.
 - o If not the specified value, replace the turn signal/multifunction switch.
3. Test for infinite resistance between the signal terminal E and the ground terminal D with the headlamp dimmer switch in the low beam position.
 - o If not the specified value, replace the turn signal/multifunction switch.
4. Test for less than 2.0 ohms of resistance between the signal terminal A and the ground terminal D with the flash to pass switch in the closed position.
 - o If not the specified value, replace the turn signal/multifunction switch.
5. Test for less than 2.0 ohms of resistance between the signal terminal E and the ground terminal D with the headlamp dimmer switch in the high beam position.
 - o If not the specified value, replace the turn signal/multifunction switch.

Relay Test

1. Ignition OFF, disconnect the DRL relay.

2. Test for 60-120 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 85
 - 30 and 86
 - 30 and 87
 - If not the specified value, replace the relay.
4. Install a 3A fused jumper wire between relay terminal 85 and B+. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Headlamp Bulb Replacement (w/Cornering Lamp) or Headlamp Bulb Replacement (w/o Cornering Lamp)**
- **Turn Signal Multifunction Switch Replacement**
- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup and programming.

INTERIOR BACKLIGHTING MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Interior Backlighting Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|-----------------------|-----------------|----------------------|------------------|--------------------|
| B+, BCM C2 Terminal 2 | B2652 00 | B2652 00 | - | - |
| B+, BCM C3 Terminal 2 | 1 | 1 | - | - |

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|--|-----------------------|----------|------|---|
| I/P Dimming Voltage Reference | B1395 03, B3600 03 | B3600 03 | 1, 2 | - |
| Backlight Lamp Control | B2610 00 | 1 | 1 | - |
| Driver Heated and Cooled Seat Switch Lamp Dimming | 3 | 3 | 3 | - |
| Passenger Heated and Cooled Seat Switch Lamp Dimming | 3 | 3 | 3 | - |
| Instrument Panel Lamps Dimmer Switch Signal | B3600 03 | B3600 03 | 1, 2 | - |
| Instrument Panel Lamp Supply Voltage | B2652 00 | 1 | 1 | - |
| LED Dimming Supply | B2610 00 | 2 | 2 | - |
| Headlamp Switch Ground | - | 2 | - | - |
| 1. Interior Backlighting Malfunction 2. Headlamps and Dimmer Switch Malfunction 3. Front Door Switch Lamps Dimming Malfunction | | | | |

Circuit/System Description

The BCM supplies a voltage reference through the instrument panel (I/P) dimming voltage reference circuit to the interior lamp dimmer switch, which is part of the headlamp switch. When the dimmer switch is placed in a desired brightness position, reference voltage is applied through the dimmer switch rheostat and the I/P lamps dimmer switch signal circuit to the BCM. The BCM interprets this voltage signal, then applies a pulse width modulated (PWM) voltage through the instrument panel lamp supply voltage circuit and the LED dimming supply circuit illuminating the LED and I/P panel lamps. For more detailed information concerning interior lamp operation refer to [Interior Lighting Systems Description and Operation](#).

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the driver door switch while commanding the Driver Door Switch Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
 - If the backlighting does not turn On and OFF or remains always ON, replace the driver door switch.
2. Ignition ON, observe the driver heated and cooled seat switch while commanding the Driver Door Switch Non-Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
 - If the backlighting does not turn On and OFF or remains always ON, refer to **Front Door Switch Backlighting Circuit Test**.
3. Ignition ON, observe the passenger door switch while commanding the Passenger Door Switch Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
 - If the backlighting does not turn On and OFF or always remains ON, replace the passenger door switch.
4. Ignition ON, observe the passenger heated and cooled seat switch while commanding the Passenger Door Switch Non-Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
 - If the backlighting does not turn On and OFF or remains always ON, refer to **Front Door Switch Backlighting Circuit Test**.
5. Ignition ON, observe the scan tool BCM Dimming Control Signal parameter while operating the dimmer switch from high to low. The reading should change from a high percent to a low percent as the switch is rotated.
 - If the reading does not change, refer to **Dimmer Switch Circuit Test**.
 - If the scan tool dimmer control operates normal, refer to **Interior Backlighting Circuit Test**.

Circuit/System Testing**Dimmer Switch Circuit Test**

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool BCM Dimming Control Signal parameter is less than 0.1 volts.
 - If greater than the specified range, test the signal circuit terminal 13 for a short to voltage. If the circuit tests normal, replace the BCM.
4. Ignition ON, test for B+ between the I/P dimming voltage reference circuit terminal 15 and ground.
 - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool BCM Dimming Control Signal parameter is greater than 2.6 volts.
 - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Interior Backlighting Circuit Test

1. Ignition OFF, disconnect the harness connector at the component with the inoperative backlighting.
2. Test for less than 5.0 ohms of resistance between the appropriate component ground circuit terminal listed below and ground.
 - Headlamp Switch terminal 8
 - Hazard Switch terminal B
 - Instrument Panel Cluster (IPC) terminal 6
 - Ashtray Lamp terminal B
 - HVAC Control Module terminal 11 C1
 - Radio terminal 8 C1
 - Driver Information Display Switch terminal 5
 - Traction Control Switch terminal A
 - Reverse Lockout Solenoid terminal D C2
 - Garage Door Opener Transmitter terminal 3

- Sunroof Switch terminal 5
 - Left Rear Door Window Switch terminal F
 - Right Rear Door Window Switch terminal F
 - Right Steering Wheel Control Switch terminal 1
 - Left Steering Wheel Control Switch terminal 8
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the appropriate component supply voltage circuit terminal listed below and ground.

Incandescent Dimming

- Headlamp Switch terminal 7
- Hazard Switch terminal A
- Instrument Panel Cluster (IPC) terminal 8
- Ashtray Lamp terminal A
- Traction Control Switch terminal D
- Reverse Lockout Solenoid terminal C C2
- Garage Door Opener Transmitter terminal 2
- Sunroof Switch terminal 3
- Left Rear Door Window Switch terminal B
- Right Rear Door Window Switch terminal B

LED Dimming

- HVAC Control Module terminal 2 with C67 C2 or CJ2 C3
- Radio terminal 7 C1
- Driver Information Display Switch terminal 4
- Right Steering Wheel Control Switch terminal 2
- Left Steering Wheel Control Switch terminal 6

4. Ignition ON, command the appropriate Incandescent Dimming or LED Dimming ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
- If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the component with the inoperative

backlighting.

Front Door Switch Backlighting Circuit Test

1. Ignition OFF, disconnect the harness connector at the inoperative heated and cooled seat switch.
2. Verify that a test lamp illuminates between the appropriate low reference circuit terminal listed below and B+.
 - Driver Heated and Cool Seat Switch terminal 3
 - Passenger Heated and Cool Seat Switch terminal 5
 - If the test lamp does not illuminate, test the low reference circuit for an open/high resistance.
3. Connect a test lamp illuminates between the appropriate dimming circuit terminal listed below and ground.
 - Driver Heated and Cool Seat Switch terminal 5
 - Passenger Heated and Cool Seat Switch terminal 3
4. Ignition ON, command the appropriate Driver or Passenger Door Switch Non-Integrated Backlighting Test ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always OFF, test the dimming control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the door switch.
 - If the test lamp is always ON, test the dimming control circuit for a short to voltage. If the circuit tests normal, replace the door switch.
5. If all circuits test normal, test or replace the heated and cooled seat switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Hazard Warning Switch Replacement**
- **Ashtray Lamp Bulb Replacement**
- **Electronic Traction Control Switch Replacement**
- **Sunroof Switch Replacement**
- **Rear Side Door Window Switch Replacement**
- **Driver Information Display Switch Replacement**
- **Steering Wheel Control Switch Assembly Replacement**
- **Transmission Floor Shift Control Indicator Lamp Replacement**
- **Door Lock and Side Window Switch Replacement - Driver Side**

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- Door Lock and Side Window Switch Replacement - Passenger Side
- Heated and Cooled Seat Switch Replacement
- Control Module References for BCM, HVAC, IPC or Radio replacement, setup and programming

PARK, LICENSE AND/OR TAIL LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

Diagnostic Fault Information

Park, License, and/or Tail Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| Park Lamp Relay Control | 2 | 1 | B2585 00 | - |
| Park Lamp Switch On Signal | B257A 00 | B257A 00, 1 | B257A 00, 1 | - |
| Left Park Lamp Supply Voltage | 3 | 3 | 3 | - |
| Right Park Lamp Supply Voltage | 4 | 4 | 4 | - |
| Left Park Lamp Ground | - | 3 | 3 | - |
| Right Park Lamp Ground | - | 4 | 4 | - |
| Headlamp Switch Ground | - | 5 | - | - |
| 1. All Park Lamps Inoperative 2. All Park Lamps Always On 3. Left Park Lamps Malfunction 4. Right Park Lamps Malfunction 5. Headlamps and Park Lamps Inoperative | | | | |

Circuit/System Description

The vehicle park, license and tail lamps are controlled by the body control module (BCM)

based on an input from the headlamp switch. The headlamp switch has four positions: Off, Auto, Park and Headlamps. The default headlamp switch position is Auto, in which the BCM uses the ambient light sensor to determine when exterior lamps are needed. The Off portion of the headlamp switch is a momentary switch which overrides the automatic lamps and will turn off the vehicle lamps. The Park position of the headlamp switch will only illuminate the vehicle parking lamps. The Headlamp position of the headlamp switch will illuminate both the parking lamps, as well as the headlamps. With the headlamp switch in the Park position, the park lamp switch on signal circuit is grounded, prompting the BCM to turn on the exterior lamps, regardless of other factors such as ambient light.

When a park lamp request is received, the BCM grounds the park lamp relay control circuit. This energizes the coil in the PARK LP PCB relay, causing the relay switch to close. Battery voltage is then applied through the LT PARK and RT PARK LAMP fuses and the park lamp supply voltage circuits illuminating the exterior lamps.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Description and Operation****Exterior Lighting Systems Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the scan tool BCM Parklamp Switch parameter while cycling the

headlamp switch between the Park and Off positions. The parameter should cycle between Active and Inactive.

- If the parameter does not cycle between the specified values, refer to [Headlamp Switch Circuit Test](#).
2. Command the Parking Lamps ON and OFF with a scan tool. Verify the park, license and tail lamps turn ON and OFF between commanded states.
 - If any of the lamps are always OFF or remain always ON, refer to [Park, License, and/or Tail Lamps Circuit Test](#).

Circuit/System Testing

Headlamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool BCM Parklamp Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal 2 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 2 and ground. Verify the scan tool Parklamp Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

Park, License, and/or Tail Lamps Circuit Test

1. Ignition OFF, disconnect the PRK Relay from the rear fuse block.
2. Ignition ON, verify that a test lamp does not illuminate between the supply voltage circuit terminal 104 and ground.
 - If the test lamp illuminates, test the supply voltage circuits for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal 102 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance.
4. Verify that a test lamp illuminates between the B+ circuit terminal 100 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance.
5. Connect a test lamp between the B+ circuit terminal 102 and the control circuit terminal 101.

6. Command the Parking Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
7. Disconnect the harness connector at the inoperative lamp.
8. Ignition OFF, test for less than 5.0 ohms of resistance between the appropriate ground circuit listed below and ground.
 - Marker Lamp or License Lamp terminal B
 - Front Park/Turn Lamp or Stop/Turn/Tail Lamp terminal G
 - Auxiliary Tail Lamp terminal 3
 - If greater than the specified range, test the ground circuit for an open/high resistance.
9. Connect a test lamp between the inoperative lamp supply voltage circuit listed below and ground.
 - Marker Lamp or License Lamp terminal A
 - Front Park/Turn or Stop/Turn/Tail Lamp terminal B
 - Auxiliary Tail Lamp terminal 2
10. Connect a 3A fused jumper wire between the B+ circuit terminal 100 and the supply voltage circuit terminal 104. Verify the test lamp is illuminated.
 - If the test lamp does not illuminate, test the supply voltage circuit for an open/high resistance. If the circuit tests normal, test or replace the bulb or lamp assembly.
11. If all circuits test normal, test or replace the park lamp relay.

Component Testing

Headlamp Switch

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for less than 2.0 ohms of resistance between the signal terminal 2 and the ground terminal 8 with the switch in the Park position.
 - If not the specified value, replace the headlamp switch.
3. Test for less than 2.0 ohms of resistance between the signal terminal 2 and the ground terminal 8 with the switch in the Headlamp position.
 - If not the specified value, replace the headlamp switch.

Relay Test

1. Ignition OFF, disconnect the park lamp relay.

2. Test for 70-100 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 85
 - 30 and 86
 - 30 and 87
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 10A fused jumper wire between relay terminal 85 and B+. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement**
- **Headlamp Replacement**
- **Tail Lamp Bulb Replacement**
- **Tail Lamp Replacement**
- **Rear License Lamp Replacement**
- **License Lamp Bulb Replacement**
- **Control Module References** for BCM replacement, setup and programming

STOP LAMPS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Stop Lamps Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---------------------|-----------------|----------------------|------------------|--------------------|
| B+, BCM C4 Terminal | | | | |

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| | | | | |
|--|----------|----------|----------|----------|
| 1 | 2 | 2 | - | - |
| Brake Apply Sensor Supply Voltage | C0870 03 | C0870 03 | C0870 07 | - |
| Brake Apply Sensor Signal | C0277 06 | C0277 06 | C0277 07 | C0277 09 |
| Brake Pedal Position Sensor Low Reference | - | 1 | - | - |
| Stop Lamp Switch Signal | C0297 00 | - | - | - |
| CHMSL Supply Voltage | B3445 00 | 4 | 4 | - |
| Left Rear Stop/Turn Lamp Supply Voltage | 2 | 2 | 2 | - |
| Right Rear Stop/Turn Lamp Supply Voltage | 3 | 3 | 3 | - |
| Center High Mounted Stop Lamp (CHMSL) Ground | - | 4 | - | - |
| Left Rear Stop/Turn Lamp Ground | - | 2 | - | - |
| Right Rear Stop/Turn Lamp Ground | - | 3 | - | - |
| <ul style="list-style-type: none"> 1. Stop lamps malfunction 2. Left stop/turn lamp malfunction 3. Right stop/turn lamp malfunction 4. Center high mounted stop lamp (CHMSL) malfunction | | | | |

Circuit/System Description

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal is applied. The body control module (BCM) provides a low reference signal and a 5-volt reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery positive voltage to the stop lamps, center high mounted stop lamp (CHMSL), transmission control module (TCM) and engine control module (ECM). The stop lamps will not operate unless the ignition is in the ON position. Ground for the left stop/tail lamp assembly is provided by G402 and ground for the right stop/tail lamp assembly is provided by G403.

Diagnostic Aids

IMPORTANT: The stop lamps will not illuminate unless the ignition is in the ON position. For more detailed information concerning stop lamp operation, refer to Exterior Lighting Systems Description and Operation.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

Stop Lamps Circuit Test

1. Ignition OFF, disconnect the (C4) harness connector at the BCM.
2. Ignition ON, verify a test lamp illuminates between the following B+ terminals and ground.
 - B+ terminal 1
 - B+ terminal 2
 - B+ terminal 4
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance.
If the circuit fuse is open, test the B+ circuit and the respective stop lamp circuits for a short to ground.
3. Ignition OFF, disconnect the harness connector at the brake pedal position sensor.
4. Verify that a test lamp illuminates between the low reference circuit terminal C and B+.

- If the test lamp does not illuminate, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
5. Ignition OFF, disconnect harness connector at the inoperative stop/turn lamp.
 6. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal G and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
 7. Connect a test lamp between the supply voltage circuit terminal A and ground.
 8. Ignition ON, command the appropriate BCM LR or RR Turn Signal ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 9. If all circuits test normal, replace the inoperative stop/turn signal lamp assembly.

High Mounted Stop Lamp Circuit Test

1. Ignition OFF, disconnect the harness connector at the CHMSL.
2. Ignition OFF, test for less than 5.0 ohms of resistance between the ground circuit terminal B and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the supply voltage circuit terminal A and the ground circuit terminal B.
4. Ignition ON, apply and release the brake pedal. The test lamp should turn ON and OFF as the brake pedal is applied and released.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, replace the CHMSL.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **High Mount Stop Lamp Replacement**
- **Tail Lamp Replacement**

- **Rear Turn Signal Lamp Bulb Replacement**

- **Control Module References** for BCM replacement, setup and programming

TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Turn Signal Lamps and/or Indicators Malfunction

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|--|-----------------|----------------------|------------------|--------------------|
| B+, BCM C4 Terminal 1 | 2 | 2 | - | - |
| B+, BCM C4 Terminal 2 | B2615 00 | B2615 00 | - | - |
| B+, BCM C4 Terminal 3 | 7 | 7 | - | - |
| Left Front Turn Signal Lamp Supply Voltage | 2 | 4, 8 | 4 | - |
| Right Front Turn Signal Lamp Supply Voltage | B2615 00 | 5, 9 | 5 | - |
| Left Rear Stop/Turn Lamp Supply Voltage | 2 | 6 | 6 | - |
| Right Rear Stop/Turn Lamp Supply Voltage | 7 | 7 | 7 | - |
| Left Turn Signal Switch Signal | 1, 2 | 2 | 2 | - |
| Right Turn Signal Switch Signal | 1 | 3 | 3 | - |
| Left Outside Rearview Mirror Turn Signal Lamp Low Reference | - | 8 | - | - |
| Right Outside Rearview Mirror Turn Signal Lamp Low Reference | - | 9 | - | - |

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| | | | | |
|---|---|---|---|---|
| LF Park/Turn Signal Lamp Ground | - | 4 | - | - |
| RF Park/Turn Signal Lamp Ground | - | 5 | - | - |
| Left Tail Stop/Turn Lamp Ground | - | 6 | - | - |
| Right Tail Stop/Turn Lamp Ground | - | 7 | - | - |
| Turn Signal/Multifunction Switch Ground | - | 1 | - | - |
| 1. All turn signals inoperative 2. Left turn signal malfunction 3. Right turn signal malfunction 4. Left front turn signal malfunction 5. Right front turn signal malfunction 6. Left rear turn signal malfunction 7. Right rear turn signal malfunction 8. Left outside rearview mirror turn signal malfunction 9. Right outside rearview mirror turn signal malfunction | | | | |

Circuit/System Description

Ground is applied at all times to the turn signal/multifunction switch from G300. The turn signal lamps may only be activated with the ignition switch in the ON position. The BCM controls the vehicle turn signals based on inputs from the turn signal/multifunction switch. With the turn signal/multifunction switch in either the left or right turn position, a ground is applied through the turn signal switch signal circuit to the BCM indicating a turn signal request. When the specific request is seen, the BCM then applies a pulsating voltage through the front and rear turn signal supply voltage circuits illuminating the turn signal lamps.

When a turn signal request is seen by the BCM, a serial data message is sent to the instrument panel cluster (IPC) requesting the respective turn signal indicator be pulsed.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

1. Ignition ON, observe the scan tool Left Turn Signal Switch parameter while using the turn signal/multifunction switch to turn the left turn signal on and off. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Turn Signal/Multifunction Switch Circuit Test.**
 - If the parameter does cycle between the specified values and the left turn signal is inoperative, refer to **Turn Signal Circuit Test.**
2. Observe the scan tool Right Turn Signal Switch parameter while using the turn signal/multifunction switch to turn the right turn signal on and off. The parameter should cycle between Active and Inactive.
 - If the parameter does not cycle between the specified values, refer to **Turn Signal/Multifunction Switch Circuit Test.**
 - If the parameter does cycle between the specified values and the right turn signal is inoperative, refer to the **Turn Signal/Multifunction Switch Circuit Test.**
3. Ignition ON, place the turn signal/multifunction switch in the left turn position. The left turn signal indicator on the IPC should cycle ON and OFF.
 - If the indicator is always OFF, replace the IPC.
4. Ignition ON, place the turn signal/multifunction switch in the right turn position. The right turn signal indicator on the IPC should cycle ON and OFF.
 - If the indicator is always OFF, replace the IPC.

Circuit/System Testing

Turn Signal/Multifunction Switch Circuit Test.

1. Ignition OFF, disconnect the (C3) harness connector at the turn signal/multifunction switch.
2. Verify that a test lamp illuminates between the ground circuit terminal G and B+.
 - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Left Turn Signal Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal F for a short to ground. If the circuit tests normal, replace the BCM.
4. Verify the scan tool Right Turn Signal Switch parameter is Inactive.
 - If not the specified value, test the signal circuit terminal H for a short to ground. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal F and the ground circuit terminal G. Verify the scan tool Left Turn Signal Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
6. Install a 3A fused jumper wire between the signal circuit terminal H and the ground circuit terminal G. Verify the scan tool Right Turn Signal Switch parameter is Active.
 - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
7. If all circuits test normal, test or replace the turn signal/multifunction switch.

Turn Signal Circuit Test.

1. Ignition OFF, disconnect the (C4) harness connector at the BCM.
2. Ignition ON, verify a test lamp illuminates between the following B+ terminals and ground.
 - B+ terminal 1
 - B+ terminal 2
 - B+ terminal 3
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance. If the circuit fuse is open, test the B+ circuit and the respective turn signal circuits for a short to ground.
3. Ignition OFF, disconnect the harness connector at the inoperative turn signal lamp.
4. Test for less than 5.0 ohms of resistance between the ground circuit terminal G and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
5. Connect a test lamp between the supply voltage circuit terminal A and the ground circuit terminal G.

6. Ignition ON, command the inoperative turn signal ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
7. If all circuits test normal, test or replace the appropriate turn signal lamp assembly.

Outside Rearview Mirror Turn Signal Circuit Test

1. Ignition OFF, disconnect the (C1) harness connector at the inoperative outside rearview mirror.
2. Connect a test lamp between the low reference circuit terminal 2 and B+.
3. Ignition ON, command the appropriate LF or RF Turn Signal ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the low reference circuit for a short to ground. If the circuit tests normal, replace the door module.
 - If the test lamp is always OFF, test the low reference circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door module.
4. Connect a test lamp between the supply voltage circuit terminal 1 and ground.
5. Ignition ON, command the appropriate LF or RF Turn Signal ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the supply voltage circuit for a short to voltage.
 - If the test lamp is always OFF, test the supply voltage circuit for an open/high resistance.
6. If all circuits test normal, test or replace the outside rearview mirror lamp bulb.

Component Test**Turn Signal/Multifunction Switch**

1. Ignition OFF, disconnect the (C3) harness connector at the turn signal/multifunction switch.
2. Test for infinite resistance between the following terminals and the ground circuit terminal E with the switch in the neutral position.
 - Signal terminal F
 - Signal terminal H
 - If not the specified value, replace the turn signal/multifunction switch.

3. Test for less than 2.0 ohms of resistance between the signal circuit terminal D and the ground circuit terminal E with the switch in the left turn position.
 - If greater than the specified range, replace the turn signal/multifunction switch.
4. Test for less than 2.0 ohms of resistance between the signal circuit terminal F and the ground circuit terminal E with the switch in the left turn position.
 - If greater than the specified range, replace the turn signal/multifunction switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Turn Signal Multifunction Switch Replacement**
- **Headlamp Bulb Replacement (w/Cornering Lamp) or Headlamp Bulb Replacement (w/o Cornering Lamp)**
- **Rear Turn Signal Lamp Bulb Replacement**
- **Control Module References** for BCM, IPC and door control module replacement, setup and programming

REPAIR INSTRUCTIONS

BRAKE PEDAL POSITION SENSOR CALIBRATION

Calibration Criteria

The brake pedal position sensor (BPPS) receives a low reference signal and a 10-volt reference signal from the body control module (BCM). Whenever the brake pedal is applied, the BPPS applies a variable voltage signal to the BCM through the stop lamp switch signal circuit. BPPS calibration must be performed after the BPPS or BCM have been serviced. The calibration procedure will set the BPPS home value. This value is used by the BCM to determine the action of the driver applying the brake system and to provide this information to the vehicle subsystems via the class 2 communication bus.

Calibration Procedure

IMPORTANT: If the master brake cylinder has been replaced, verify that the correct pushrod is installed before attempting to calibrate the BPPS.

1. Turn ON the ignition, with the engine OFF.
2. Install a scan tool. Select the proper vehicle and options.
3. Navigate to the BCM menu.
4. Select Module Setup menu item.

5. Select the BPPS calibration procedure and follow the directions displayed on the screen.

BRAKE PEDAL POSITION SENSOR REPLACEMENT

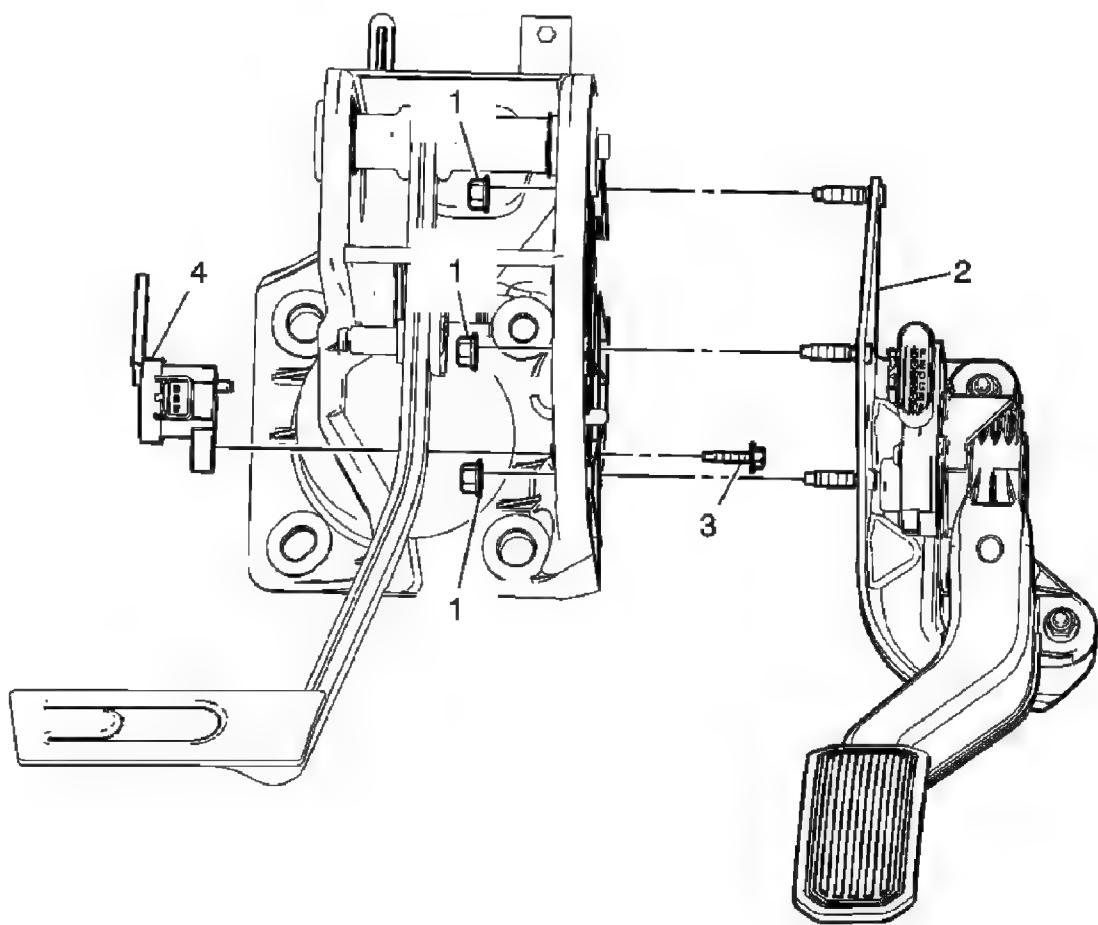


Fig. 64: Identifying Brake Pedal Position Sensor

Courtesy of GENERAL MOTORS CORP.

Brake Pedal Position Sensor Replacement

| Callout | Component Name |
|-------------------------------|---|
| Preliminary Procedure: | |
| | Remove the accelerator pedal. Refer to Accelerator Pedal Position Sensor Replacement . |
| 1 | Accelerator Pedal Assembly Nut (Qty: 3) NOTE: Refer to Fastener Notice . Tighten: 9 N.m (80 lb in) |
| 2 | Accelerator Pedal Assembly |

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3

Brake Pedal Position Sensor Bolt

Tighten: 2 N.m (18 lb in)

4

Brake Pedal Position Sensor

Tip:

- Disconnect the electrical connector.
- Calibrate the brake pedal position sensor. Refer to **Brake Pedal Position Sensor Calibration**.

HEADLAMP SWITCH REPLACEMENT

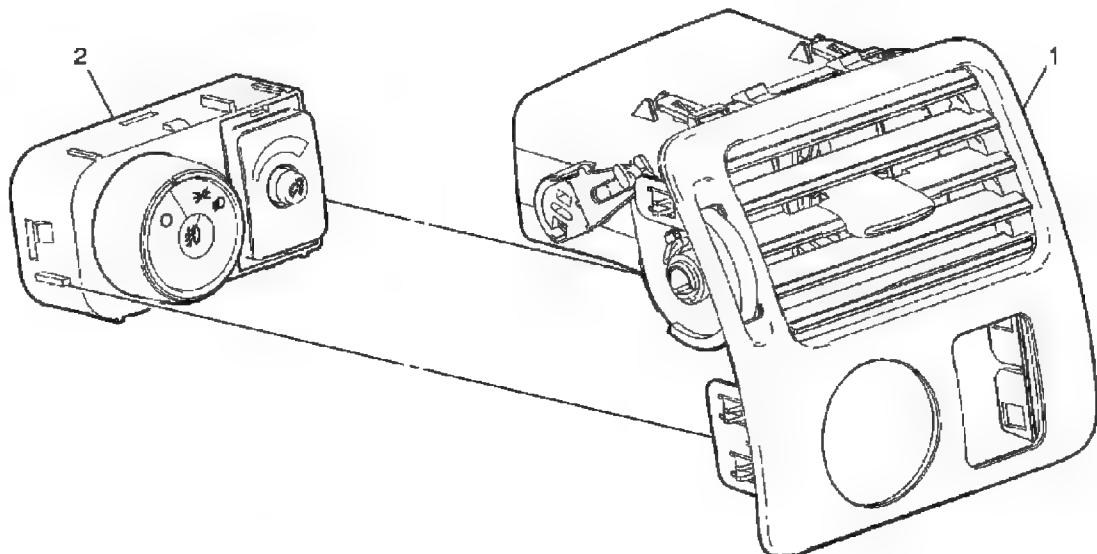


Fig. 65: Identifying Headlamp Switch
Courtesy of GENERAL MOTORS CORP.

Headlamp Switch Replacement

| Callout | Component Name |
|--|---|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Instrument Panel Outer Air Outlet Assembly Left Refer to <u>Instrument Panel Outer Air Outlet Replacement - Left Side</u> . |
| 2 | Headlamp Switch Assembly |

INTERIOR LAMP SWITCH REPLACEMENT

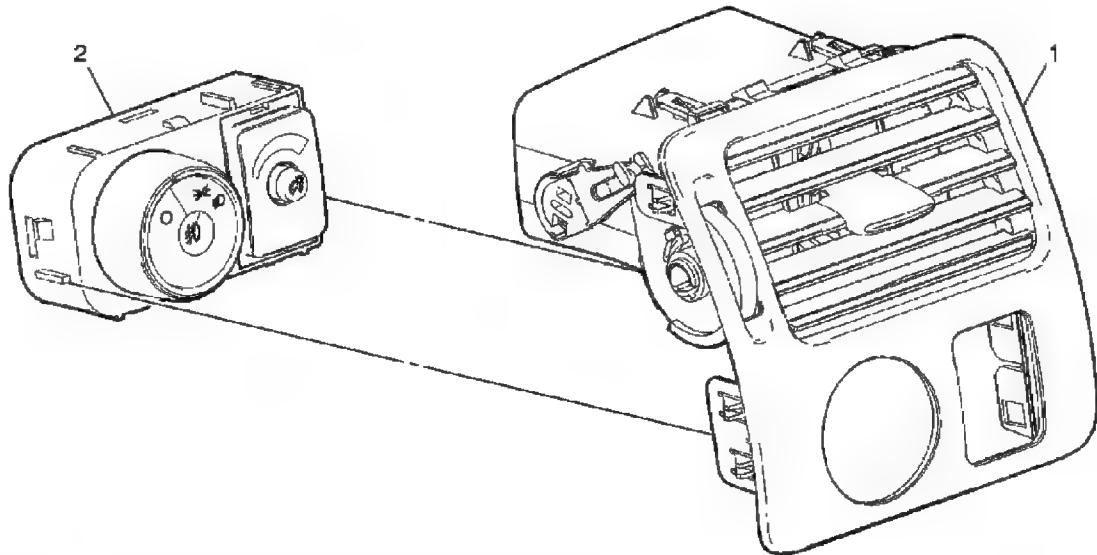


Fig. 66: Identifying Interior Lamp Switch

Courtesy of GENERAL MOTORS CORP.

Interior Lamp Switch Replacement

| Callout | Component Name |
|---|--|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Instrument Panel Outer Air Outlet Assembly Left Refer to <u>Instrument Panel Outer Air Outlet Replacement - Left Side</u> . |
| 2 | Headlamp Switch Assembly Tip: The instrument panel dimmer switch is an integral part of the headlamp switch and must be replaced as an assembly. |

HAZARD WARNING SWITCH REPLACEMENT

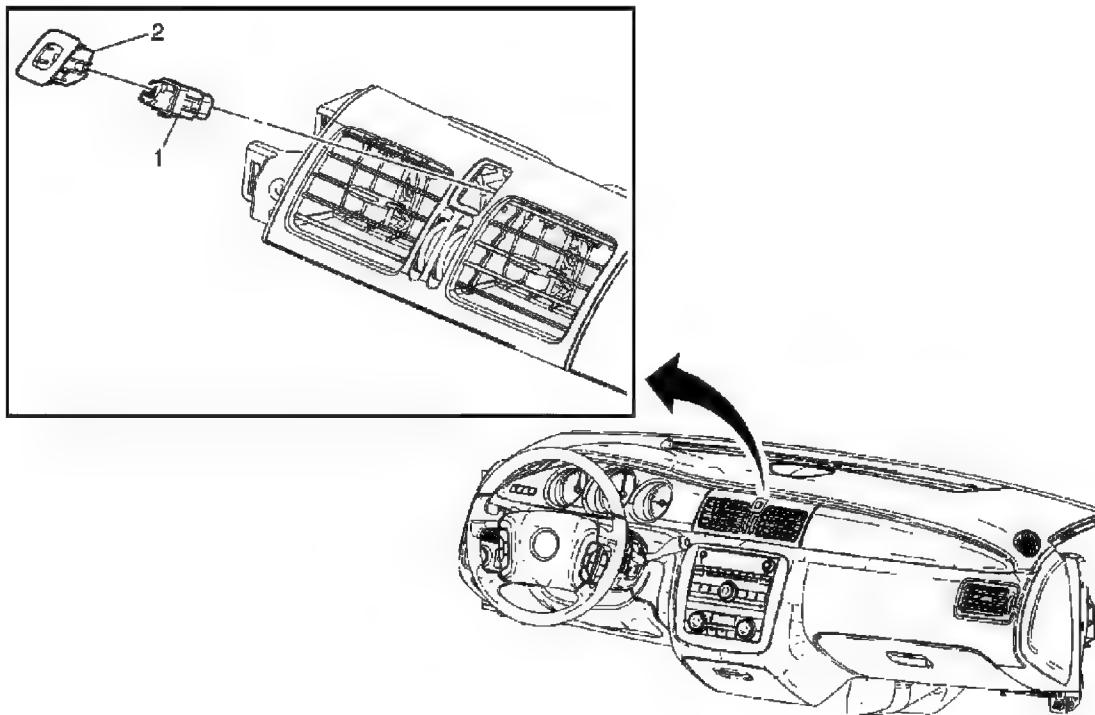


Fig. 67: Locating Hazard Warning Switch
Courtesy of GENERAL MOTORS CORP.

Hazard Warning Switch Replacement

| Callout | Component Name |
|--|--|
| Fastener Tightening Specifications: Refer to Fastener Tightening Specifications . | |
| 1 | Hazard Warning Switch Tip: <ol style="list-style-type: none">1. Use the J 42214 to remove the hazard warning switch and bezel. Insert the tool into the hole in the air outlet on each side of the switch to release the tabs.2. Disconnect the electrical connector. |
| 2 | Hazard Warning Switch Bezel |

AMBIENT LIGHT SENSOR REPLACEMENT

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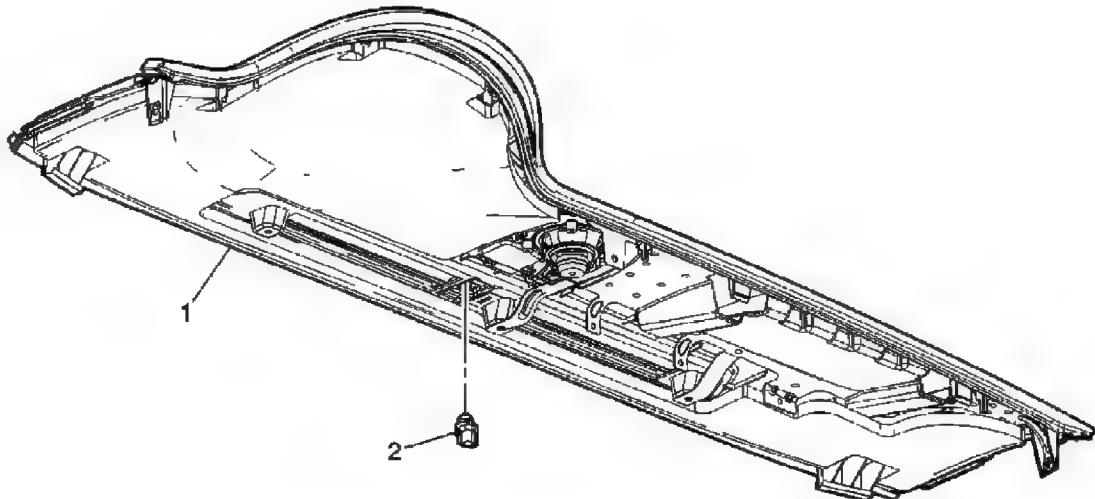


Fig. 68: View Of Ambient Light Sensor

Courtesy of GENERAL MOTORS CORP.

Ambient Light Sensor Replacement

| Callout | Component Name |
|---------|--|
| 1 | Instrument Panel Upper Trim Pad Refer to <u>Instrument Panel Upper Trim Pad Replacement</u> . |
| 2 | Headlamp Auto Control Ambient Light Sensor Tip: <ul style="list-style-type: none">• Twist and pull out of the instrument panel upper trim pad.• Disconnect the electrical connectors. |

READING LAMP BULB REPLACEMENT

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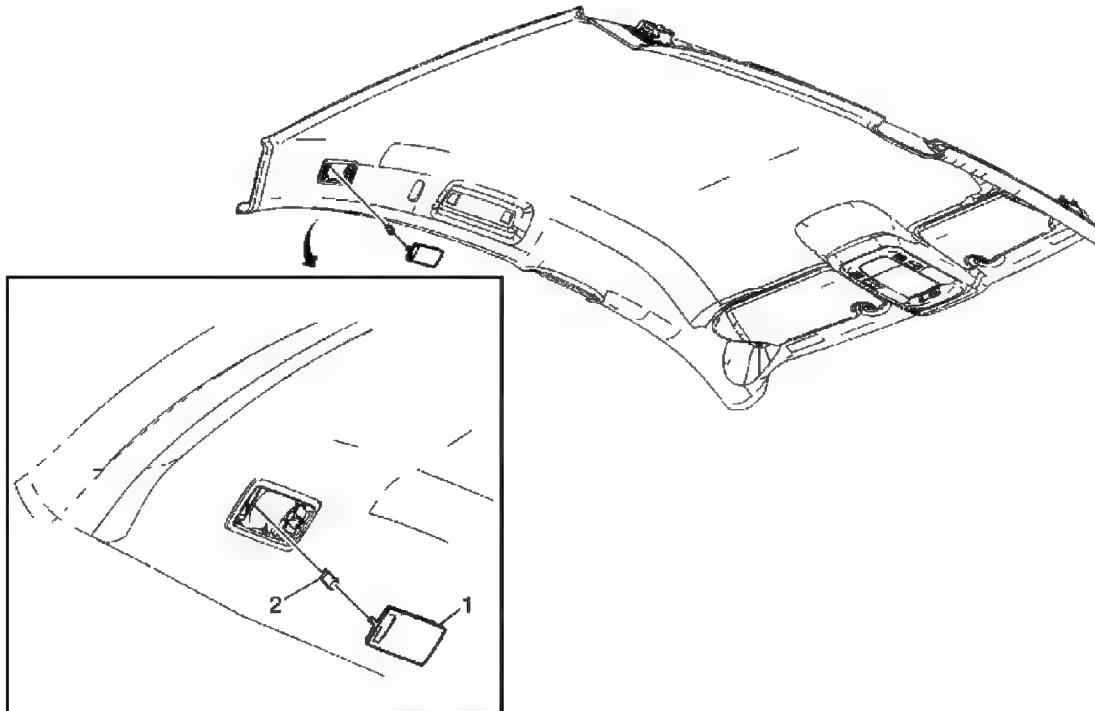


Fig. 69: Locating Reading Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Reading Lamp Bulb Replacement

| Callout | Component Name |
|---|---|
| Fastener Tightening Specifications: Refer to Fastener Tightening Specifications . | |
| 1 | Roof Rail Rear Courtesy and Reading Lamp Lens |
| 2 | Roof Rail Rear Courtesy and Reading Lamp Bulb |

ASHTRAY LAMP BULB REPLACEMENT

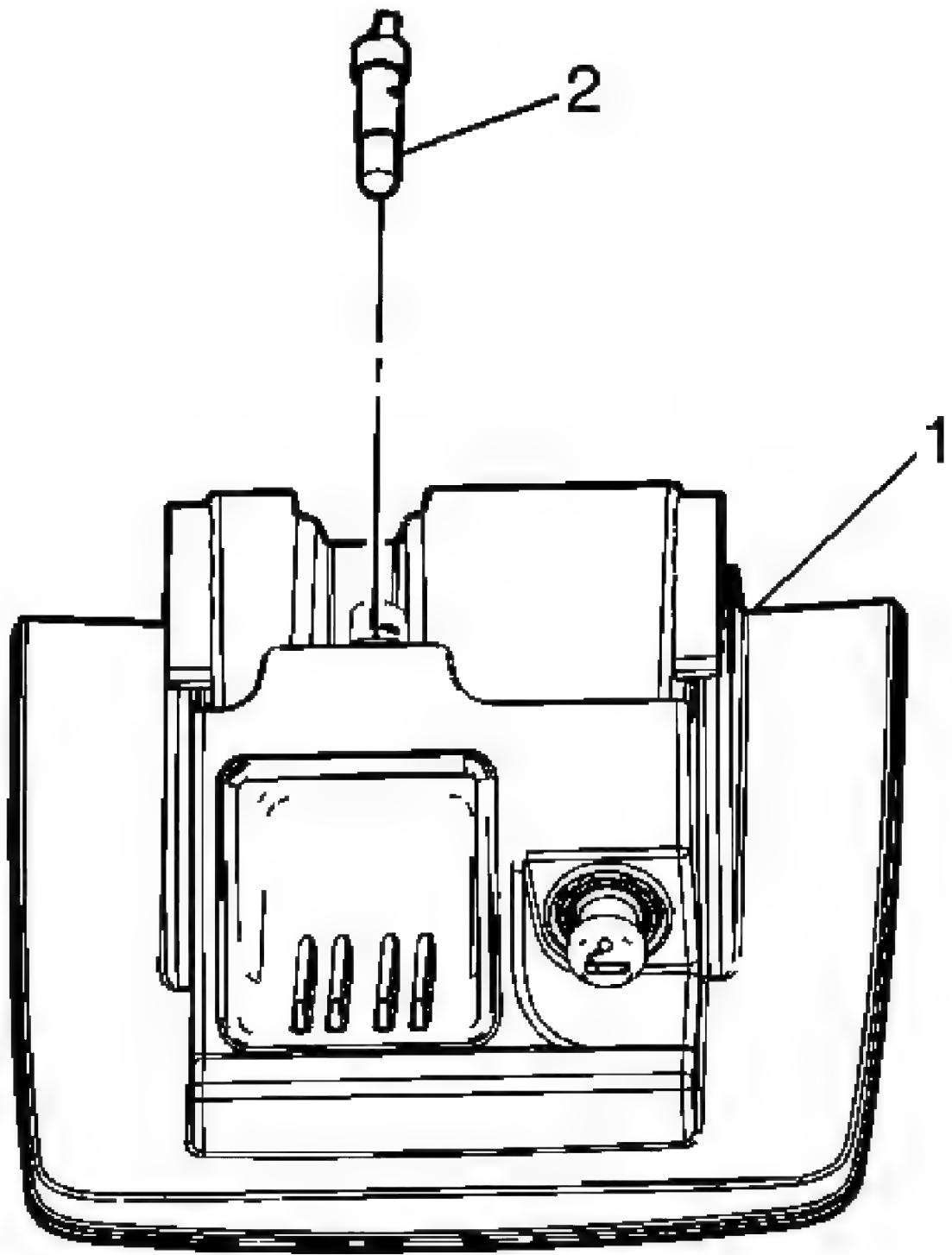


Fig. 70: Identifying Ashtray Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Ashtray Lamp Bulb Replacement

| Callout | Component Name |
|---|----------------|
| Fastener Tightening Specifications: Refer to Fastener Tightening Specifications . | |

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| | |
|---|---|
| 1 | Ashtray Assembly Refer to <u>Ashtray Replacement</u> . |
| 2 | Ashtray Lamp |

INSTRUMENT PANEL COURTESY LAMP BULB REPLACEMENT

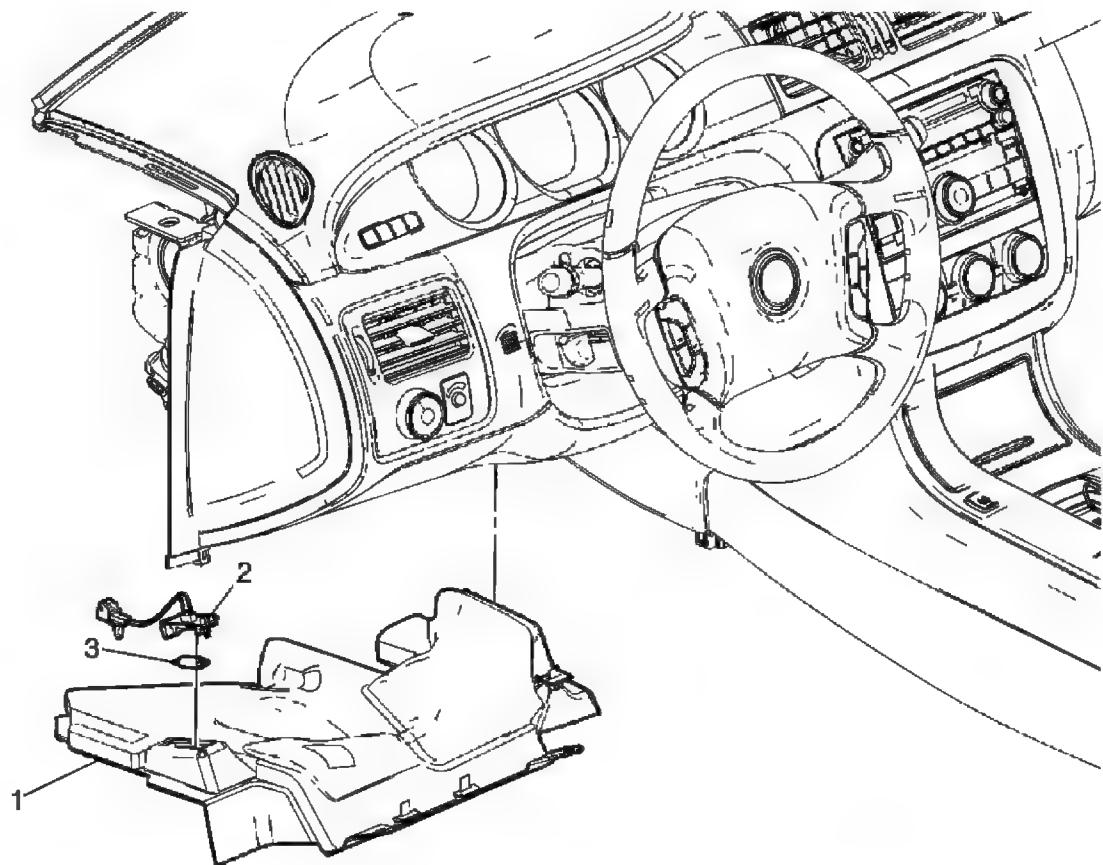


Fig. 71: Locating Instrument Panel Courtesy Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Instrument Panel Courtesy Lamp Bulb Replacement

| Callout | Component Name |
|--|--|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Instrument Panel Insulator Assembly Refer to <u>Instrument Panel Insulator Panel Replacement - Left Side</u> or <u>Instrument Panel Insulator Panel Replacement - Right Side</u> . |
| 2 | Instrument Panel Courtesy Lamp Assembly |
| 3 | Instrument Panel Courtesy Lamp Bulb |

OVERHEAD CONSOLE READING LAMP AND BULB REPLACEMENT

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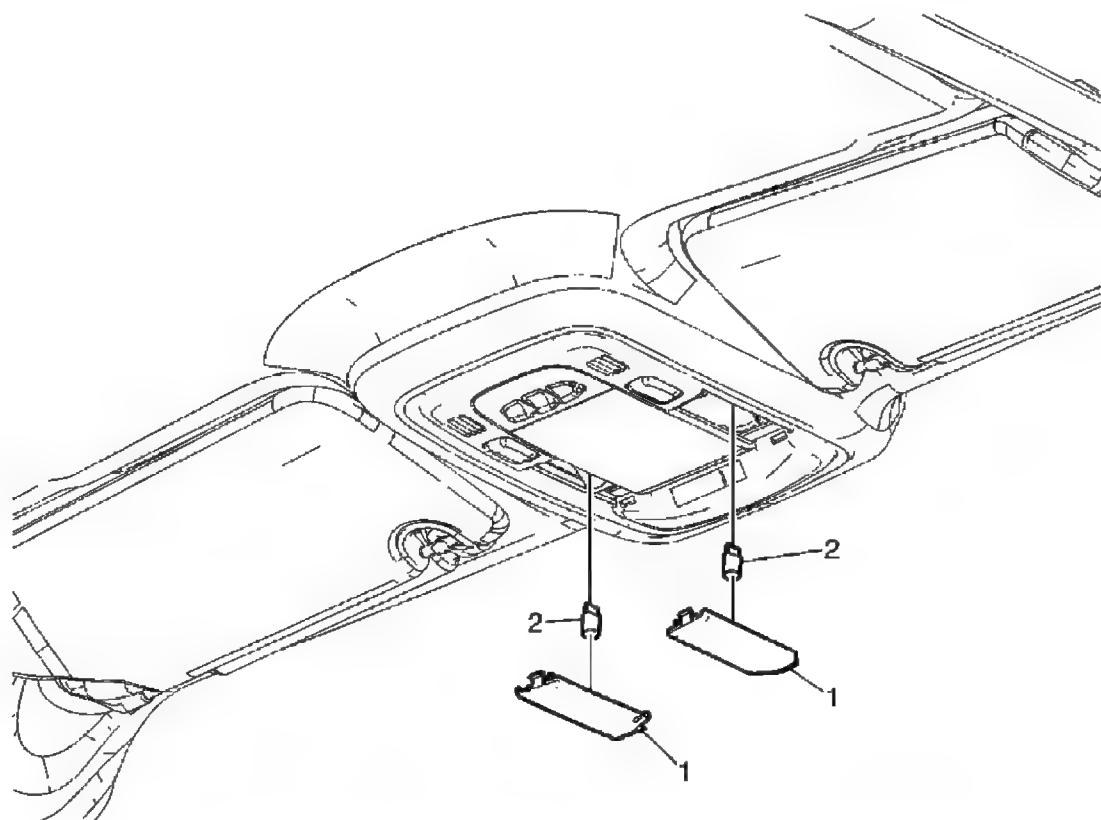


Fig. 72: View Of Overhead Console Reading Lamp and Bulbs

Courtesy of GENERAL MOTORS CORP.

Overhead Console Reading Lamp and Bulb Replacement

| Callout | Component Name |
|--|----------------------------|
| Fastener Tightening Specifications: Refer to Fastener Tightening Specifications . | |
| 1 | Overhead Console Lamp Lens |
| 2 | Overhead Console Lamp Bulb |

INSTRUMENT PANEL COMPARTMENT LAMP SWITCH REPLACEMENT

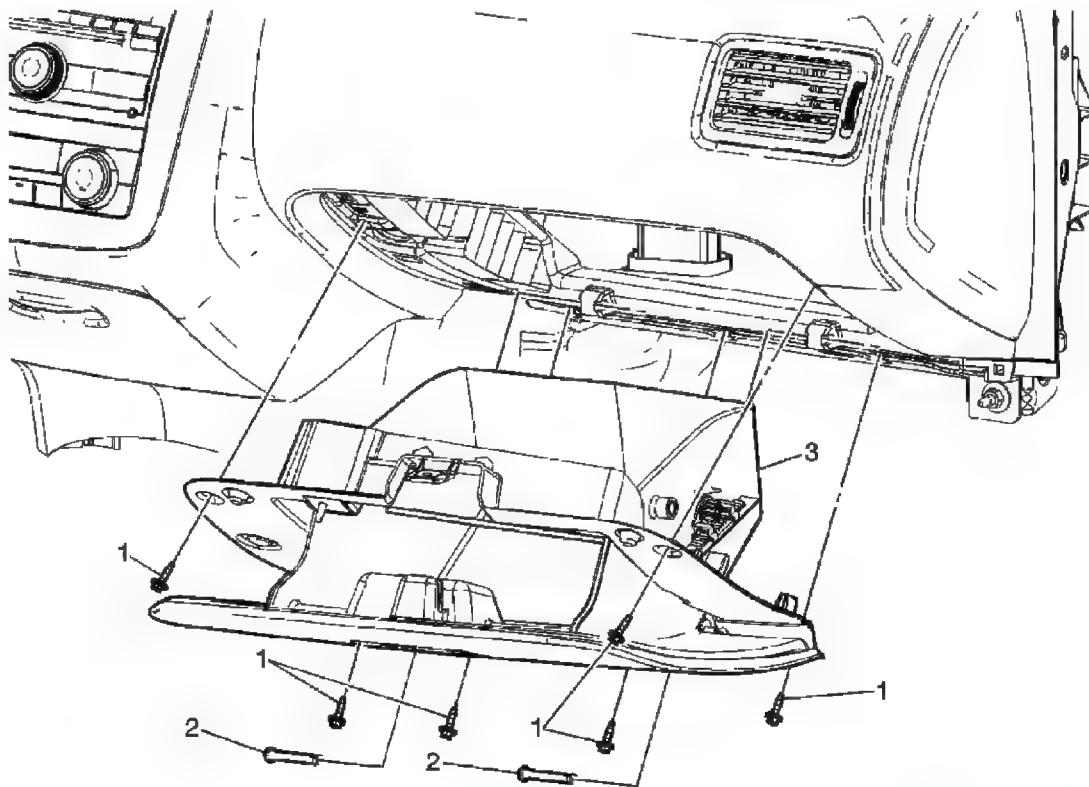


Fig. 73: Locating Instrument Panel Compartment Lamp Switch
Courtesy of GENERAL MOTORS CORP.

Instrument Panel Compartment Lamp Switch Replacement

| Callout | Component Name |
|---------|--|
| 1 | <p>Instrument Panel Door Opening Frame Screws (Qty: 5)</p> <p>NOTE: Refer to <u>Fastener Notice</u>.</p> <p>Tighten: 2 N.m (18 lb in)</p> <p>Tip: Remove the instrument panel compartment door assembly (3). Refer to <u>Instrument Panel Compartment Door Replacement</u>.</p> |
| 2 | <p>Instrument Panel Compartment Lamp Switch</p> <p>Tip:</p> <ol style="list-style-type: none"> 1. Use a small flat-bladed tool to release the switch from the door opening frame. 2. Disconnect the electrical connector. |

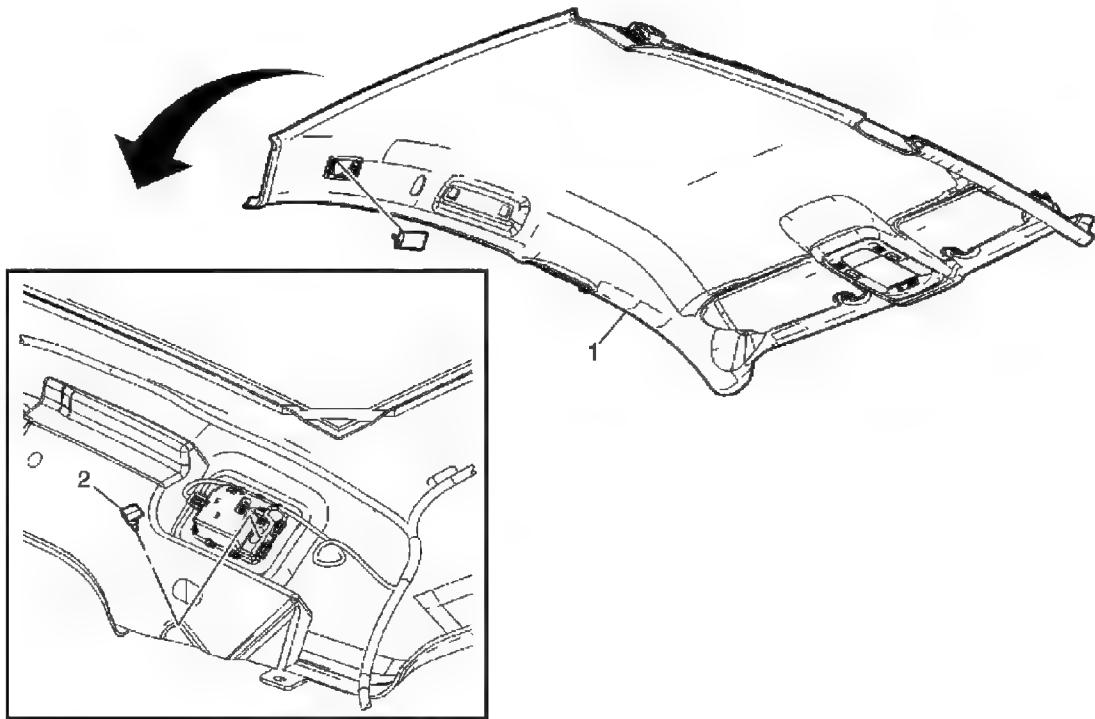
ROOF RAIL REAR COURTESY LAMP SWITCH REPLACEMENT

Fig. 74: View Of Roof Rail Rear Courtesy Lamp Switch
Courtesy of GENERAL MOTORS CORP.

Roof Rail Rear Courtesy Lamp Switch Replacement

| Callout | Component Name |
|---|---|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Headlining Trim Panel Assembly Refer to <u>Headlining Trim Panel Replacement</u> . Tip: Lower the headliner enough to gain access to the back side of the rear roof rail lamp. |
| 2 | Roof Rail Rear Courtesy and Reading Lamp Switch |

ROOF RAIL REAR COURTESY LAMP REPLACEMENT

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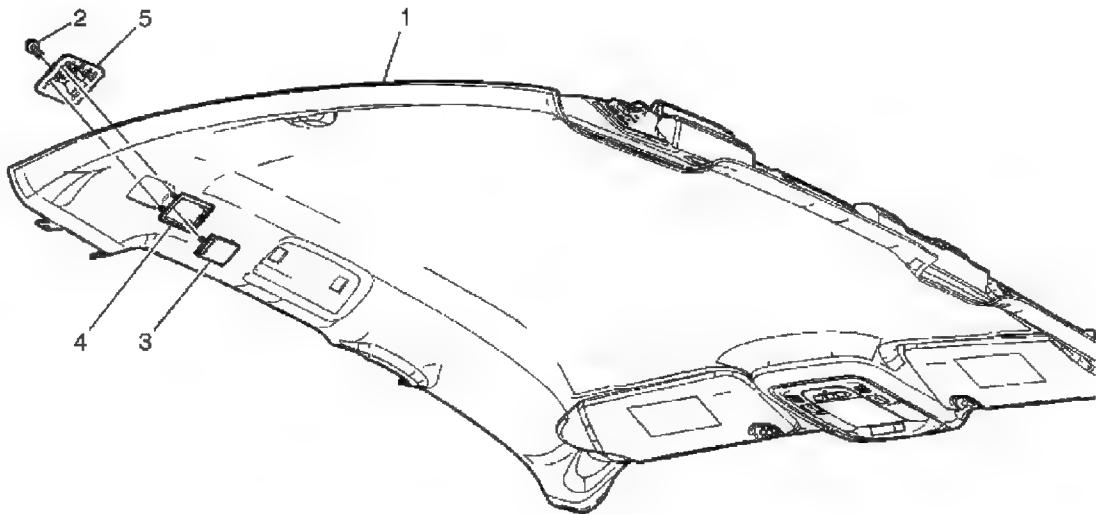


Fig. 75: View Of Roof Rail Rear Courtesy Lamp
Courtesy of GENERAL MOTORS CORP.

Roof Rail Rear Courtesy Lamp Replacement

| Callout | Component Name |
|--|--|
| NOTE: Refer to <u>Fastener Notice</u> . | |
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 Headlining Trim Panel Assembly Refer to <u>Headlining Trim Panel Replacement</u> . Tip: Lower the headliner enough to gain access to the back side of the rear roof rail lamp. | |
| 2 | Roof Rail Rear Courtesy and Reading Lamp Screw Tighten: 2 N.m (18 lb in) |
| 3 | Roof Rail Rear Courtesy and Reading Lamp Lens |
| 4 | Roof Rail Rear Courtesy and Reading Lamp Bezel |
| 5 | Roof Rail Rear Courtesy and Reading Lamp Housing |

VANITY MIRROR LAMP REPLACEMENT

Removal Procedure

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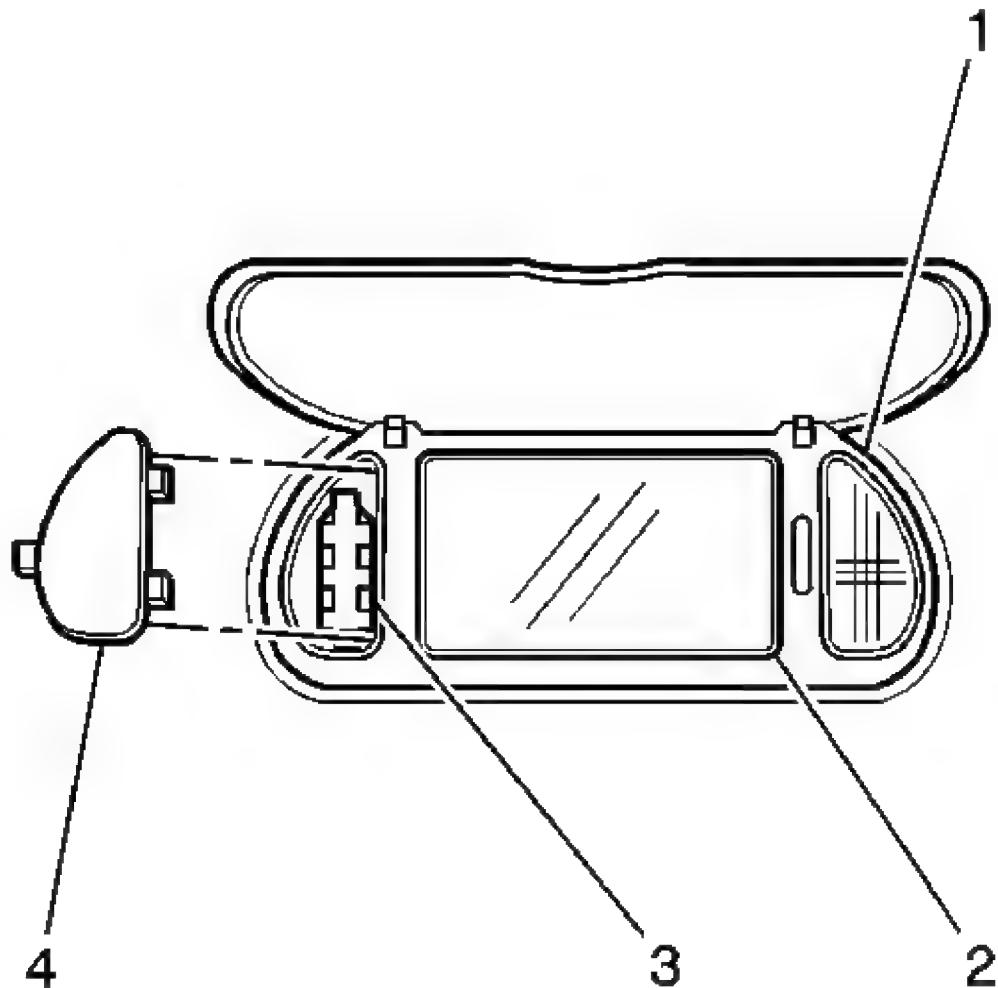


Fig. 76: Removing/Installing Vanity Mirror Lamp
Courtesy of GENERAL MOTORS CORP.

1. Open the vanity mirror cover.
2. Using a thin-bladed tool, insert the edge of the tool under the outside edge of the vanity mirror lamp lens (4).
3. Carefully snap the vanity mirror lamp lens (4) out of the retaining slots.
4. Remove the vanity mirror lamp bulb (3).

Installation Procedure

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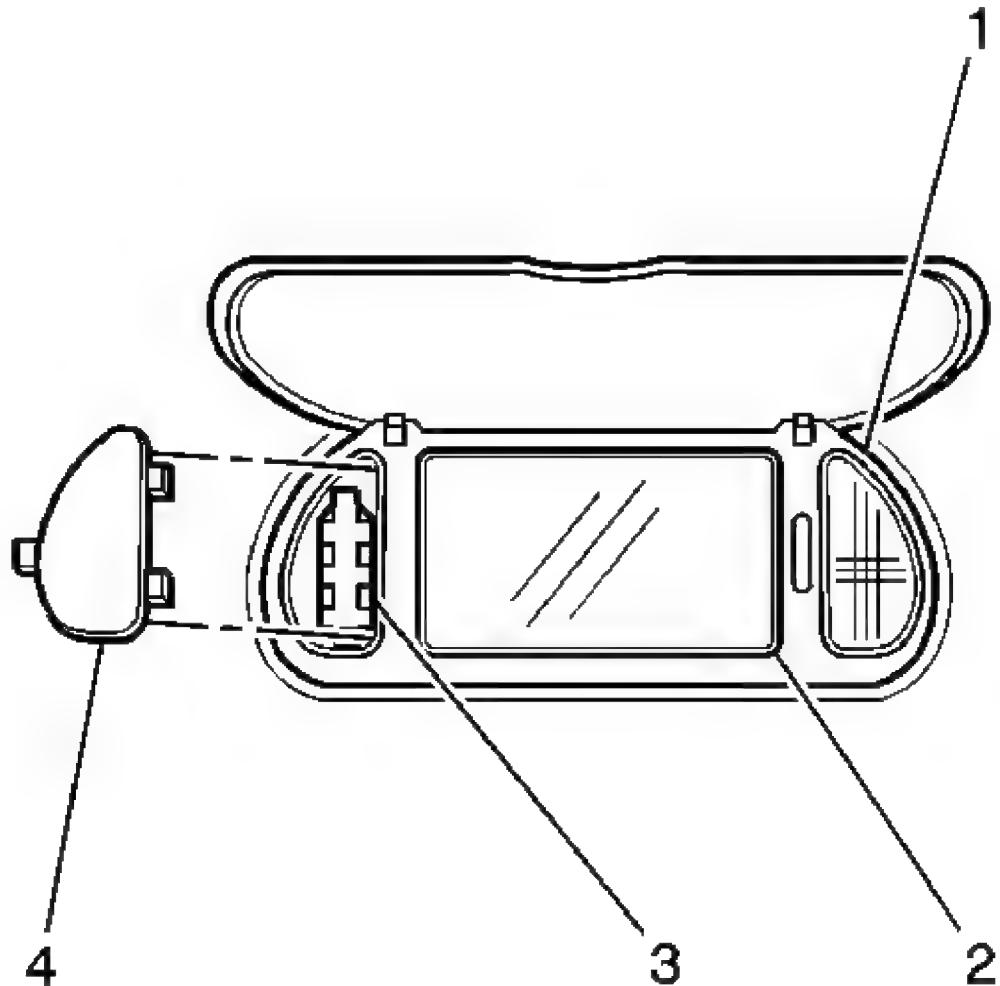


Fig. 77: Removing/Installing Vanity Mirror Lamp
Courtesy of GENERAL MOTORS CORP.

1. Install the vanity mirror lamp bulb (3).
2. Install the vanity mirror lamp lens (4) into the vanity mirror assembly.
3. Close the vanity mirror cover.

TRANSMISSION FLOOR SHIFT CONTROL INDICATOR LAMP REPLACEMENT

Removal Procedure

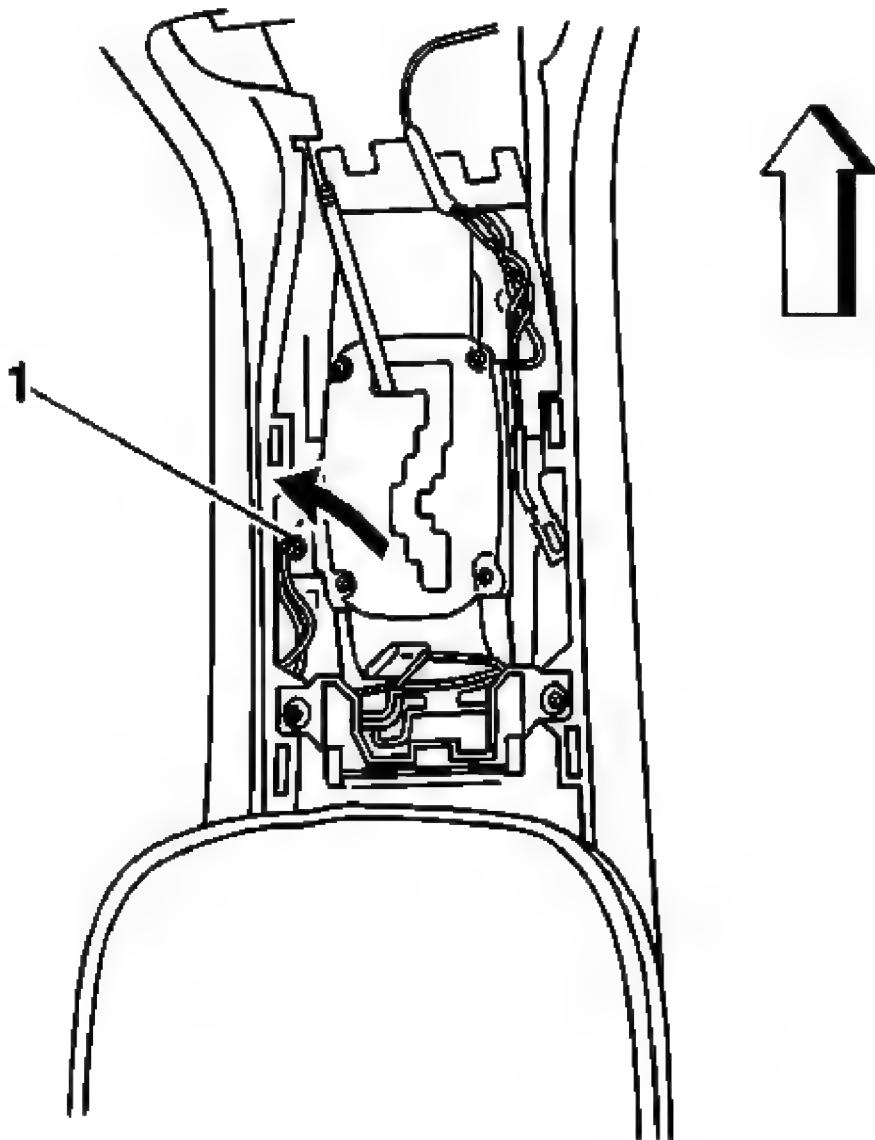


Fig. 78: View of Shift Indicator Lamp Socket

Courtesy of GENERAL MOTORS CORP.

1. Remove the console center trim plate. Refer to [Front Floor Console Trim Plate Replacement](#) in Instrument Panel, Gages and Console.
2. Rotate the shift indicator lamp socket (1) counterclockwise in order to release the lamp and socket (1) from the shifter assembly.
3. Remove the lamp and socket (1) from the shifter assembly.

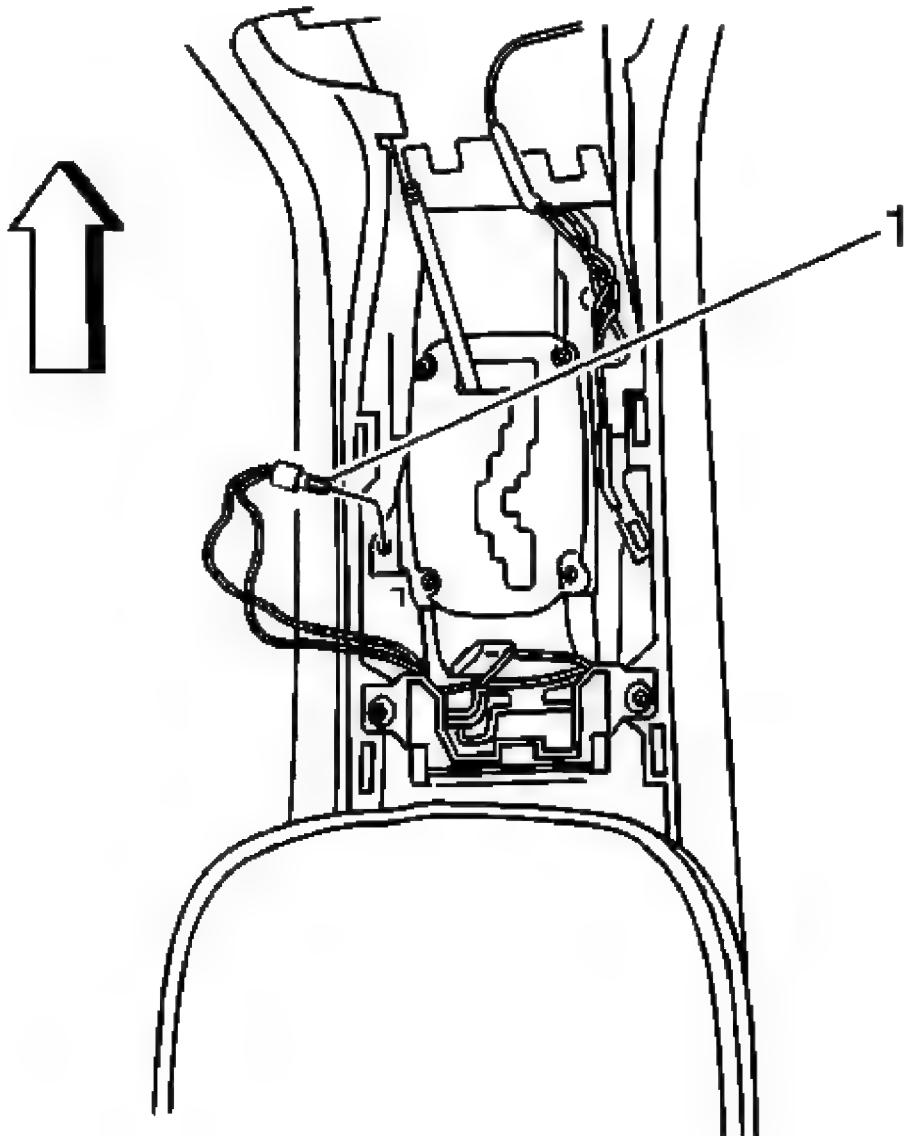


Fig. 79: View of Shift Indicator Lamp
Courtesy of GENERAL MOTORS CORP.

4. Remove then shift indicator lamp (1) from the lamp socket.

Installation Procedure

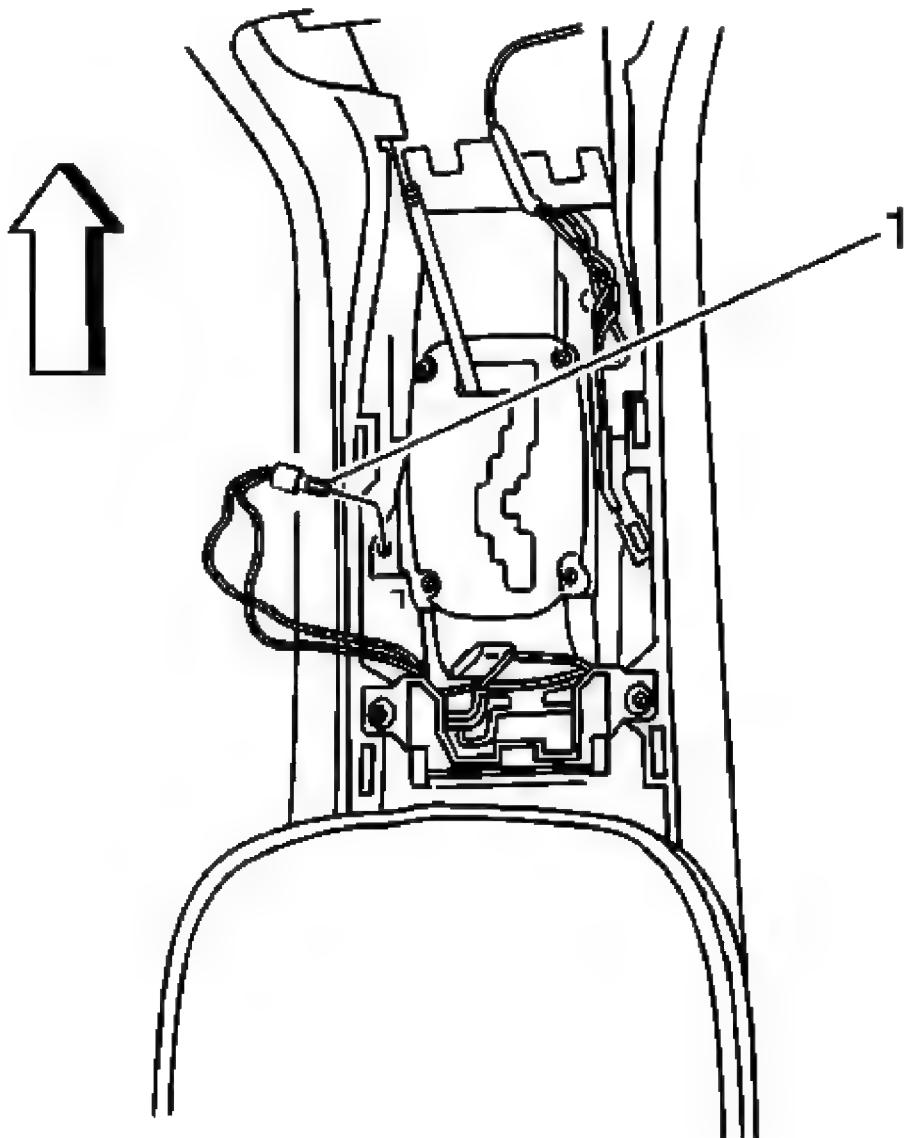
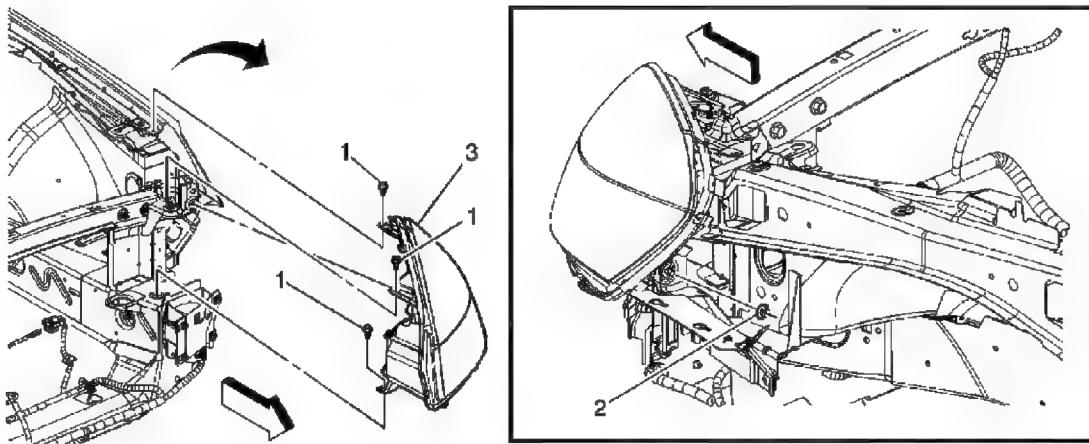


Fig. 80: View of Shift Indicator Lamp
Courtesy of GENERAL MOTORS CORP.

1. Install the shift indicator lamp (1) to the lamp socket.
2. Install the lamp and socket to the shifter assembly.
3. Rotate the shift indicator lamp socket clockwise.
4. Install the console center trim plate. Refer to **Front Floor Console Trim Plate Replacement** in Instrument Panel, Gages and Console.

HEADLAMP REPLACEMENT**Fig. 81: Removing/Installing Headlamp**

Courtesy of GENERAL MOTORS CORP.

Headlamp Replacement

| Callout | Component Name |
|--|---|
| Preliminary Procedure: Remove the front bumper fascia. Refer to <u>Front Bumper Fascia Replacement</u> . | |
| 1 | <p>Headlamp Capsule Assembly Bolts (Qty: 3)</p> <p>NOTE: Refer to <u>Fastener Notice</u>.</p> <p>Tip: Tighten the fasteners in sequence as shown.</p> <p>Tighten: 6 N.m (53 lb in)</p> |
| 2 | <p>Headlamp Capsule Assembly Nut</p> <p>Tip: Access the nut by pulling back the front fender liner.</p> <p>Tighten: 6 N.m (53 lb in)</p> |
| 3 | <p>Headlamp Capsule Assembly</p> <p>Tip:</p> <ol style="list-style-type: none"> 1. The headlamp is engaged to the sheet metal by a stud located at the lower outboard corner and 2 pins in the center lower, inside the lamp. 2. Pull the lamp outward to release the retainer pins from the body panel. |

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3. Disconnect the electrical harness connector at the lower rear edge of the lamp.

HEADLAMP BULB REPLACEMENT (W/CORNERING LAMP)

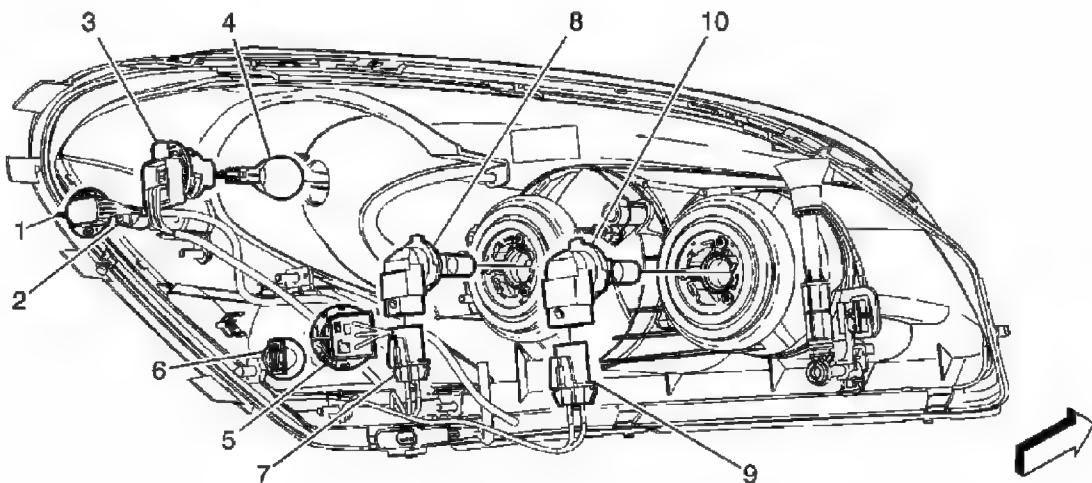


Fig. 82: View Of Headlamp Bulb (w/Cornering Lamp)

Courtesy of GENERAL MOTORS CORP.

Headlamp Bulb Replacement (w/Cornering Lamp)

| Callout | Component Name |
|---|--|
| Preliminary Procedure: Remove either the LF or RF headlamp capsule assembly. Refer to <u>Headlamp Replacement</u> . | |
| 1 | Front Side Marker Lamp Socket Tip: Twist the socket a quarter turn counterclockwise in order to remove. |
| 2 | Front Side Marker Lamp Bulb Tip: Pull the lamp bulb straight from the lamp socket. |
| 3 | Daytime Running Lamp Electrical Connector Socket Tip: Twist the socket a quarter turn counterclockwise in order to remove. |
| 4 | Daytime Running Lamp Bulb Tip: Pull the bulb straight from the socket. |
| 5 | Front Corner Lamp Bulb Socket Tip: Twist the bulb socket a quarter turn counterclockwise in order to remove. |
| 6 | Front Corner Lamp Bulb Tip: Pull the lamp bulb straight from the lamp socket. |
| 7 | Headlamp Bulb Assembly Electrical Connector Tip: Disengage the connector prior to removing the bulb socket. |

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| | |
|----|--|
| | Headlamp Bulb Assembly (Low Beam) |
| 8 | CAUTION: Refer to <u>Halogen Bulb Caution</u> . |
| | Tip: Disengage the connector prior to removing the bulb socket. |
| 9 | Headlamp Bulb Assembly Electrical Connector Tip: Disengage the connector prior to removing the bulb socket. |
| 10 | Headlamp Bulb Assembly (High Beam) CAUTION: Refer to <u>Halogen Bulb Caution</u> . Tip: Twist the bulb socket counterclockwise in order to remove the bulb. |

HEADLAMP BULB REPLACEMENT (W/O CORNERING LAMP)

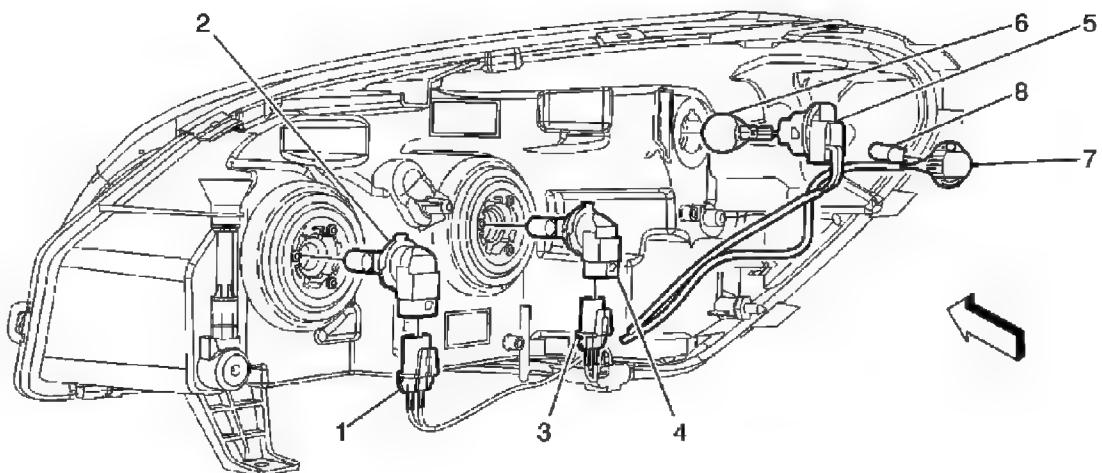


Fig. 83: View Of Headlamp Bulb (w/o Cornering Lamp)

Courtesy of GENERAL MOTORS CORP.

Headlamp Bulb Replacement (w/o Cornering Lamp)

| Callout | Component Name |
|---|---|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| Preliminary Procedure: | |
| Remove either the LF or RF headlamp capsule assembly. Refer to <u>Headlamp Replacement</u> . | |
| 1 | Headlamp Bulb Assembly Electrical Connector |

| | |
|---|--|
| | Tip: Disengage the connector prior to removing the bulb socket. |
| 2 | CAUTION: Refer to <u>Halogen Bulb Caution</u> . Headlamp Bulb Assembly (High Beam) Tip: Twist the bulb socket counterclockwise in order to remove the bulb. |
| 3 | Headlamp Bulb Assembly Electrical Connector Tip: Disengage the connector prior to removing the bulb socket. |
| 4 | CAUTION: Refer to <u>Halogen Bulb Caution</u> . Headlamp Bulb Assembly (Low Beam) Tip: Disengage the connector prior to removing the bulb socket. |
| 5 | Daytime Running Lamp Electrical Connector Socket Tip: Twist the socket a quarter turn counterclockwise in order to remove. |
| 6 | Daytime Running Lamp Bulb Tip: Pull the DRL lamp bulb straight out from the lamp socket. |
| 7 | Front Side Marker Lamp Socket Tip: Twist the socket a quarter turn counterclockwise in order to remove. |
| 8 | Front Side Marker Lamp Bulb Tip: Pull the lamp bulb straight from the lamp socket. |

HEADLAMP AIMING

The vehicle has a visual optical headlamp aiming system. The aim has been preset at the factory and should need no further adjustment.

However, If the vehicle is damaged in an accident, the headlamp aim may be affected and adjustment may be necessary.

The vehicle should be properly prepared as follows:

- The vehicle should be placed so the headlamps are 25 ft. (7.6 m) from a light colored wall or other flat surface.
- The vehicle must have all 4 tires on a perfectly level surface which is level all the way to the wall or other flat surface.
- The vehicle should be placed so it is perpendicular to the wall or other flat surface.
- The vehicle should not have any snow, ice or mud on it.
- The vehicle should be fully assembled and all other work stopped while headlamp aiming is being done.
- The vehicle should be normally loaded with a full tank of fuel and one person or 75 kg

(160 lbs) on the driver seat.

- Tires should be properly inflated.

Headlamp aiming is done with the vehicle low-beam headlamps. The high-beam headlamps will be correctly aimed if the low-beam headlamps are aimed properly.

The vertical headlamp aiming screws are located under the hood near the headlamps.

The adjustment screw can be turned with a 6 mm male hex.

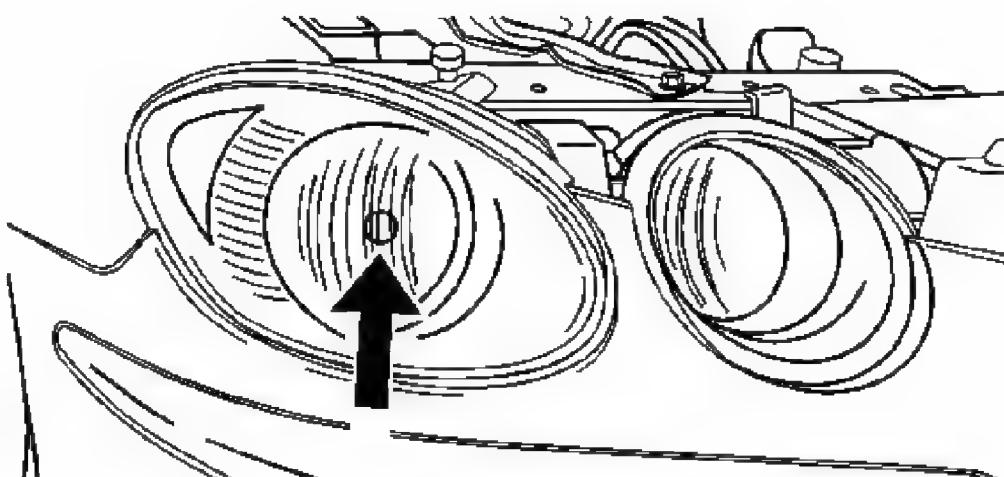


Fig. 84: Identifying Headlight Aiming Dot

Courtesy of GENERAL MOTORS CORP.

1. To adjust the vertical aim on the headlamps, do the following:
2. Find the aim dot on the lens of the low-beam lamp.
3. Measure the distance from the ground to the aim dot on the lamp. Record the distance.
4. At the wall or other flat surface, measure from the ground upward the recorded distance from step 2 and draw or tape a horizontal line the width of the vehicle.

NOTE: **Do not cover a headlamp to improve beam cut-off when aiming. Covering a headlamp may cause excessive heat build-up which may cause damage to the headlamp.**

5. Turn on the low-beam headlamps and place a piece of cardboard or equivalent in front of the headlamp not being aimed. This should allow only the beam of light from the

headlamp being aimed to be seen on the flat surface.

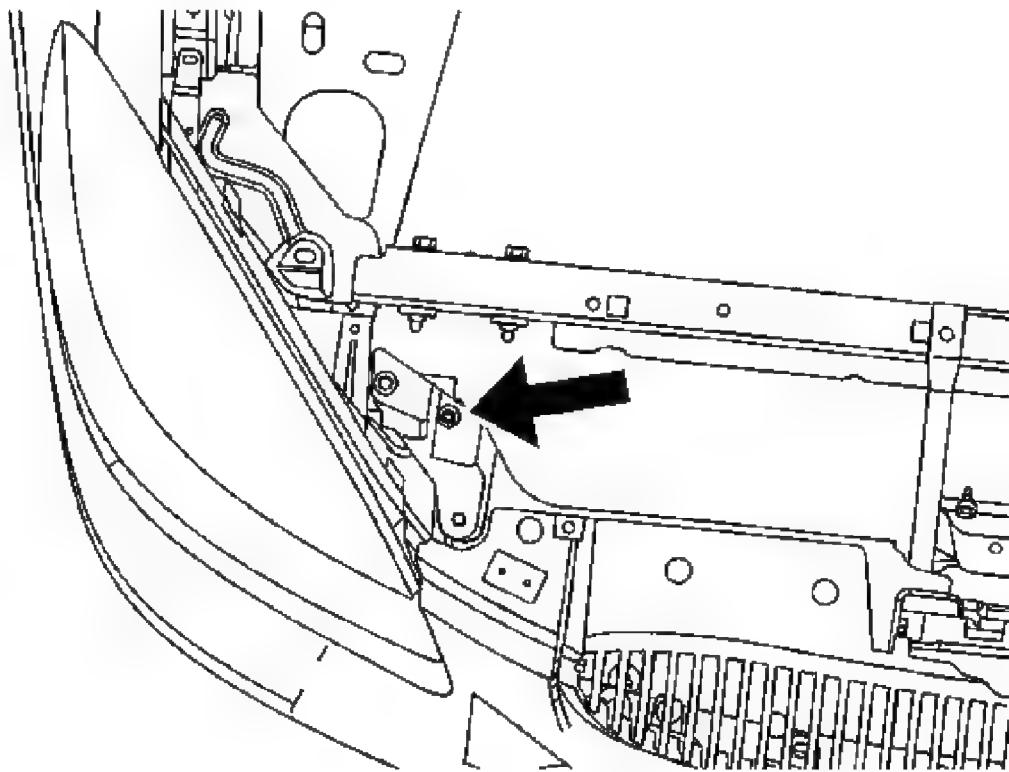


Fig. 85: Adjusting Headlamp Alignment
Courtesy of GENERAL MOTORS CORP.

6. Turn the vertical aiming screw until the headlamp beam is aimed to the horizontal tape line. The top edge of the cut-off should be positioned at the bottom edge of the horizontal tape line.
7. Repeat steps 6 and 7 for the opposite headlamp.

FRONT FOG LAMP REPLACEMENT

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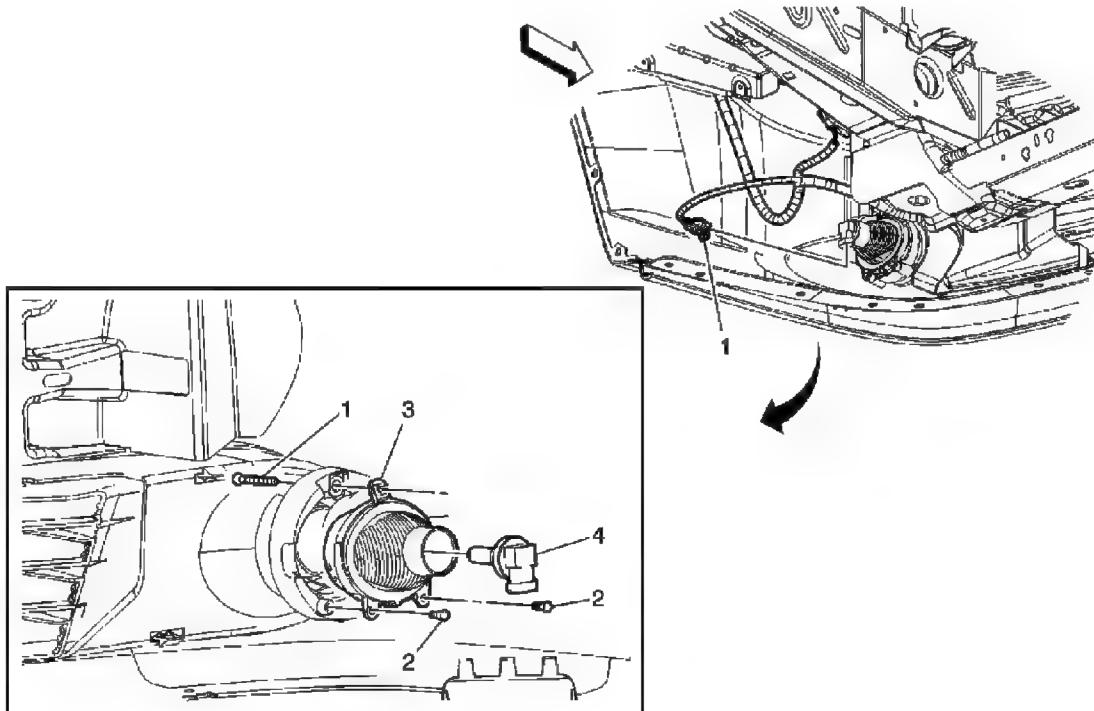


Fig. 86: Removing/Installing Front Fog Lamp
Courtesy of GENERAL MOTORS CORP.

Front Fog Lamp Replacement

| Callout | Component Name |
|---|---|
| NOTE: <u>Refer to Fastener Notice .</u> | |
| | Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . |

Preliminary Procedures

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove either the LF or RF wheelhouse liner. Refer to Front Wheelhouse Liner Replacement .
3. Disconnect the fog lamp bulb socket electrical connector.

| | |
|---|--|
| 1 | Front Fog Lamp Adjuster Screw |
| | <ol style="list-style-type: none">1. Remove the adjuster screw from the fog lamp bracket and lamp assembly.2. Count the number of turns when removing the adjuster screw for a reference upon installation.3. Aim the fog lamps after installation. Refer to <u>Fog Lamp Aiming</u>. |

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| | |
|---|--|
| 2 | Front Fog Lamp Screws (Qty: 2) Tighten: 2 N.m (18 lb in) |
| 3 | Front Fog Lamp Assembly Tip: Remove the lamp assembly from the fog lamp bracket. |
| 4 | Front Fog Lamp Bulb CAUTION: Refer to <u>Halogen Bulb Caution</u> . Tip: Turn the bulb socket counterclockwise and remove from the lamp assembly. |

FRONT FOG LAMP BULB REPLACEMENT

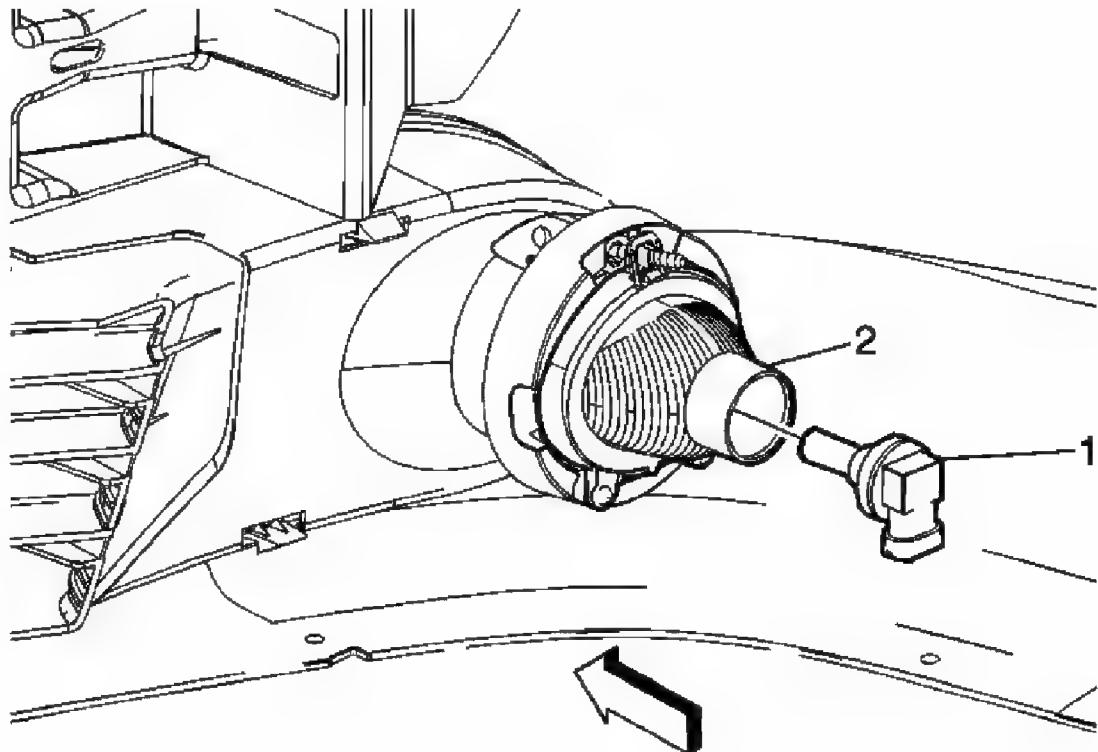


Fig. 87: Removing/Installing Front Fog Lamp Bulb

Courtesy of GENERAL MOTORS CORP.

Front Fog Lamp Bulb Replacement

| Callout | Component Name |
|---|----------------|
| <p>Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u>. Remove either the LF or RF forward wheelhouse liner. Refer to <u>Front Wheelhouse</u></p> | |

Liner Replacement .**Preliminary Procedure:**

Disconnect the electrical connector from the fog lamp bulb socket assembly.

| | |
|---|--|
| 1 | Front Fog Lamp Bulb CAUTION: Refer to <u>Halogen Bulb Caution</u> . |
| | Tip: Disconnect the fog lamp bulb socket from the fog lamp housing by rotating the bulb socket a quarter turn counterclockwise. |
| 2 | Fog Lamp Housing |

FOG LAMP AIMING**Adjustment Procedure**

Proper road illumination and safety require the fog lamps to be aimed. The front fog lamp aim should be checked when a new front fog lamp assembly is installed or if any service repairs have been performed to the vehicle which disturb the front fog lamp mounting or the vehicle ride height.

There are no horizontal adjustments for aiming the front fog lamp assemblies on this vehicle.

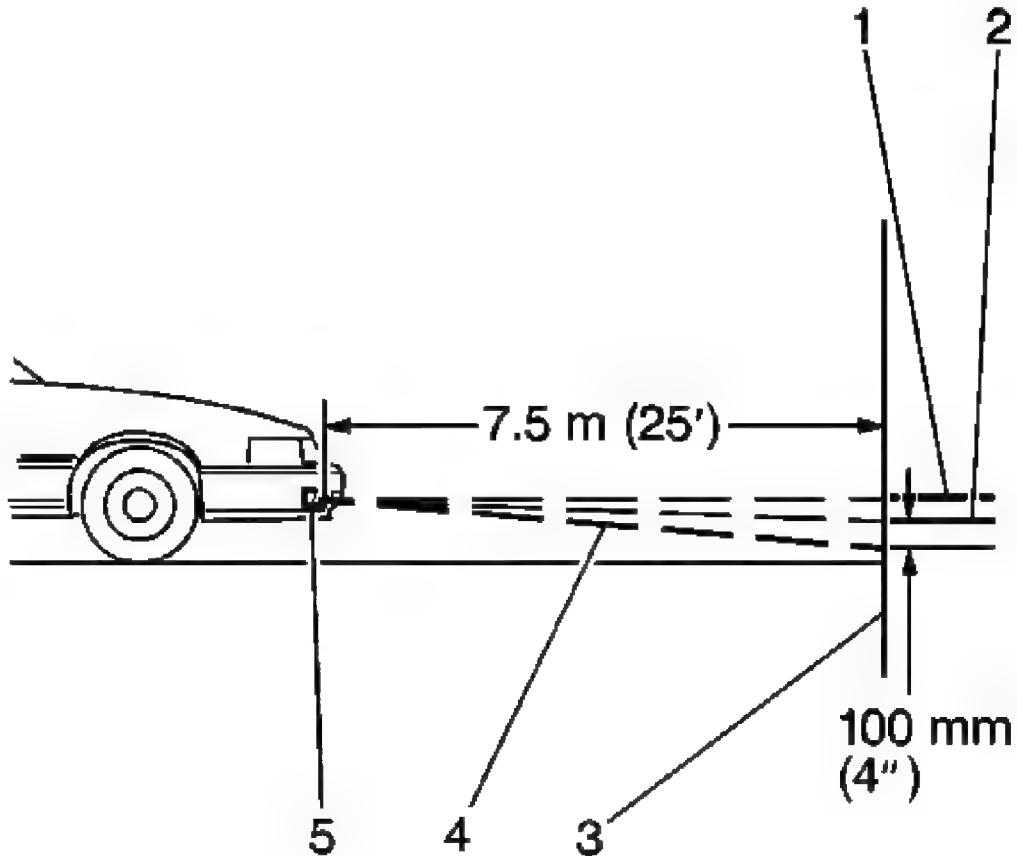


Fig. 88: Identifying Fog Lamp Aiming Procedure Distances

Courtesy of GENERAL MOTORS CORP.

1. To ensure accurate vertical front fog lamp aiming, first perform the following steps to prepare the vehicle.
 - Make sure that all the components are in place on the vehicle, the tires are properly inflated and there is not any mud or snow clinging to the vehicle.
 - Stop all other operations of work on the vehicle.
 - Make sure the fuel level is 1/2 full or more.
 - Jounce the vehicle to settle the suspension.
 - Place the vehicle on a level surface 7.6 m (25 ft) from the target screen.
 - Measure the distance from the floor to the center of the fog lamp (5).
 - Using this measurement, mark the horizontal centerline of the fog lamp (1) on the target screen directly in front of the vehicle.
2. Turn the front fog lamps ON.

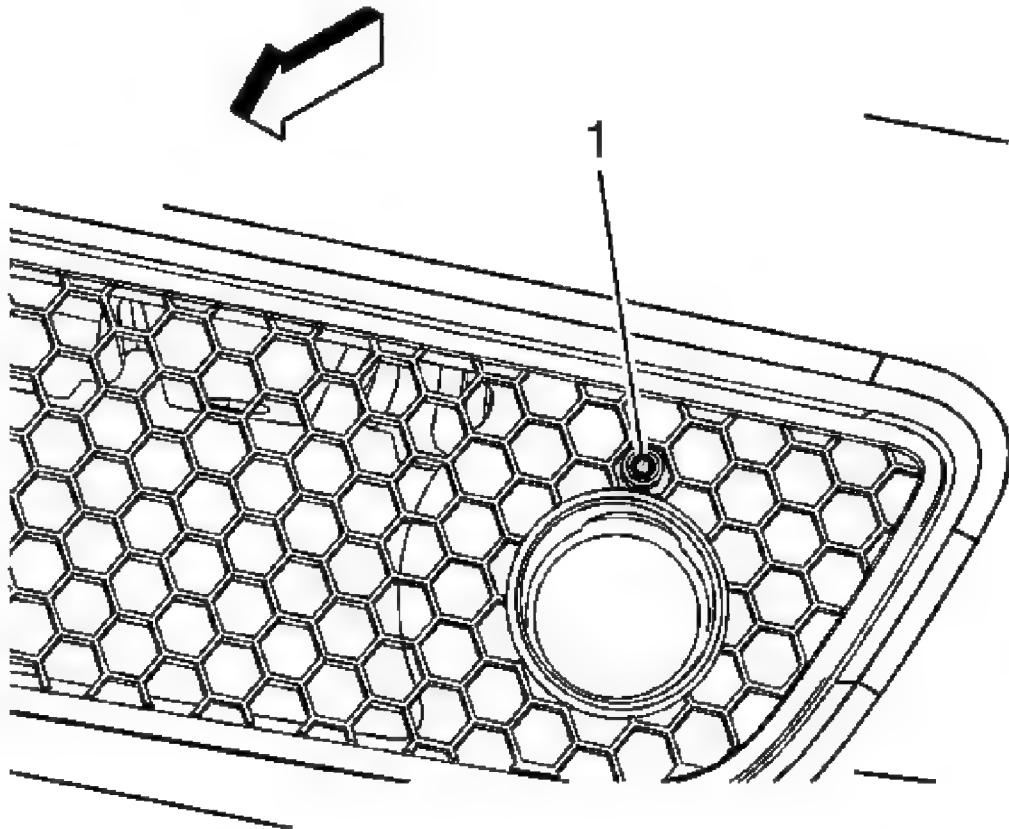
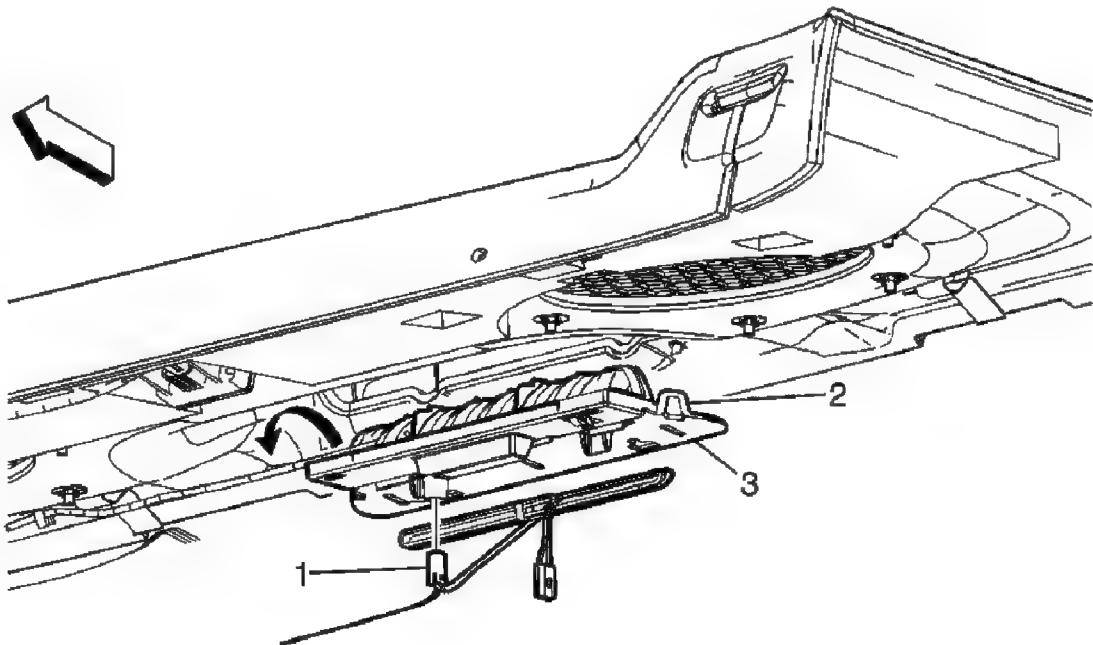


Fig. 89: Identifying Fog Lamp Vertical Adjuster Screw

Courtesy of GENERAL MOTORS CORP.

3. Through the opening in the lower front grille above the fog lamp, access the fog lamp vertical adjuster screw (1).
4. Adjust the fog lamp up or down until the top edge of the high intensity zone on the screen is 102 mm below the horizontal centerline.
5. Turn OFF the front fog lamps.

HIGH MOUNT STOP LAMP REPLACEMENT

**Fig. 90: Identifying High Mount Stop Lamp**

Courtesy of GENERAL MOTORS CORP.

High Mount Stop Lamp Replacement

| Callout | Component Name |
|---|--|
| Preliminary Procedure: | |
| Remove the rear window shelf trim panel. Refer to Rear Window Shelf Trim Panel Replacement . | |
| 1 | High Mounted Stop Lamp Assembly Electrical Connection Tip: Disconnect the electrical connector. |
| 2 | Retention Clip (Qty: 2) Tip: Disconnect the retention clips securing the center high mounted stop lamp (CHMSL) to the rear trim package shelf. |
| 3 | High Mounted Stop Lamp Assembly Tip: <ul style="list-style-type: none"> • The high mounted stop lamp is serviced as a unit, LED assembly. • Roll the high mounted stop lamp assembly forward in order to remove the lamp from the rear trim package shelf. |

BACKUP LAMP BULB REPLACEMENT

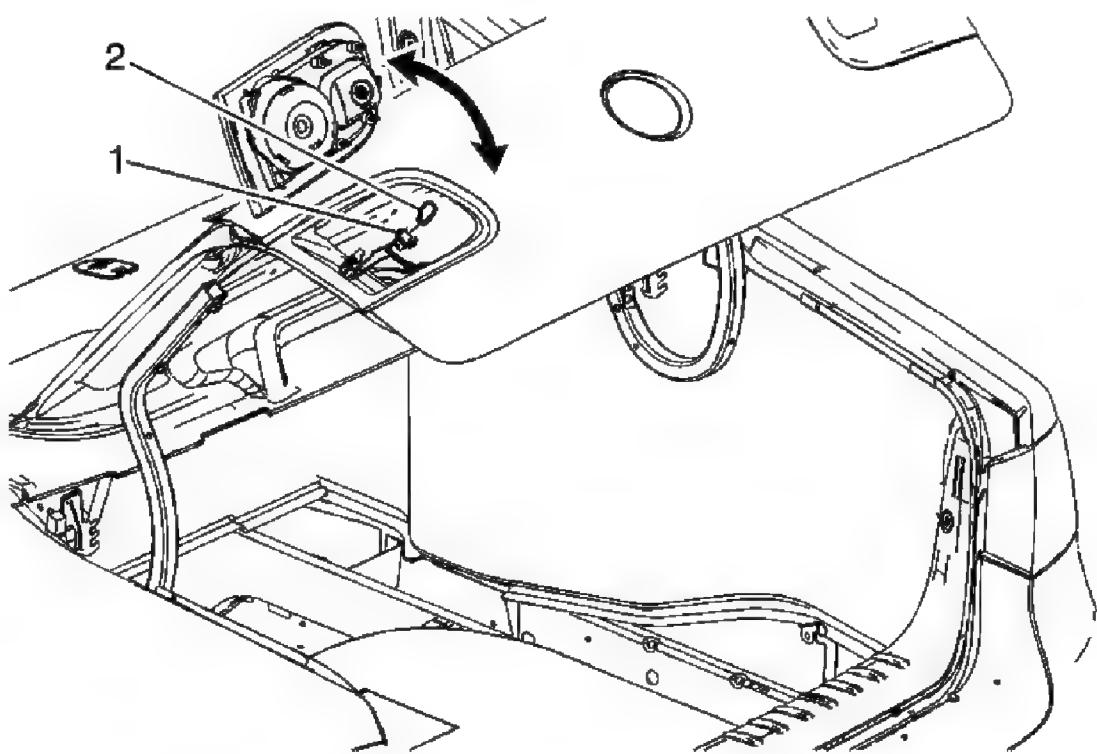


Fig. 91: Locating Backup Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Backup Lamp Bulb Replacement

| Callout | Component Name |
|---|--|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| Preliminary Procedure: Remove either the LR or RR rear auxiliary turn signal lamp assembly. Refer to <u>Rear Auxiliary Turn Signal Lamp Replacement</u> . | |
| 1 | Back Up Lamp Bulb Socket (Qty: 2) Tip: Twist the bulb socket counterclockwise a quarter turn to access the bulb. |
| 2 | Back Up Lamp Bulb Tip: Pull the bulb straight from the bulb socket. |

REAR LICENSE LAMP REPLACEMENT

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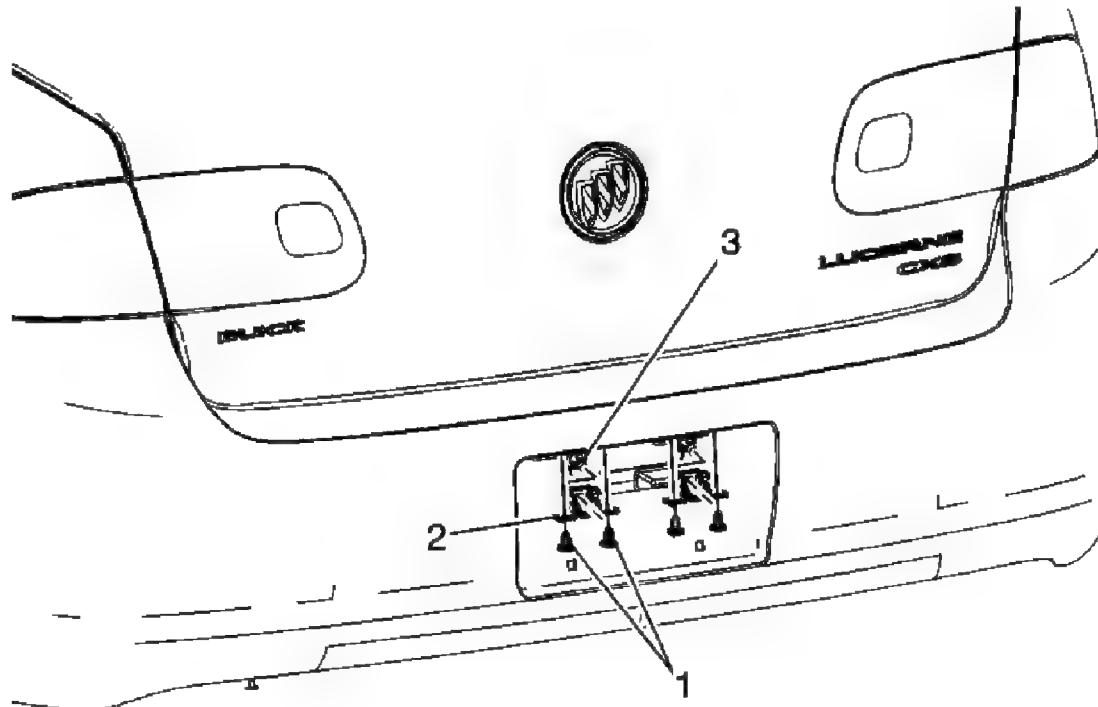


Fig. 92: View Of Rear License Lamp
Courtesy of GENERAL MOTORS CORP.

Rear License Lamp Replacement

| Callout | Component Name |
|---|---|
| NOTE: Refer to <u>Fastener Notice</u> . | |
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Rear License Plate Lamp Screws (Qty: 4) Tighten: 2 N.m(18 lb in) |
| 2 | Rear License Plate Lamp Lens (Qty: 2) Tip: Push the lens forward then pull outward from the rear bumper fascia opening. |
| 3 | License Plate Lamp Socket Tip: Twist the lamp socket electrical connector counterclockwise and remove from the lens. |

LICENSE LAMP BULB REPLACEMENT

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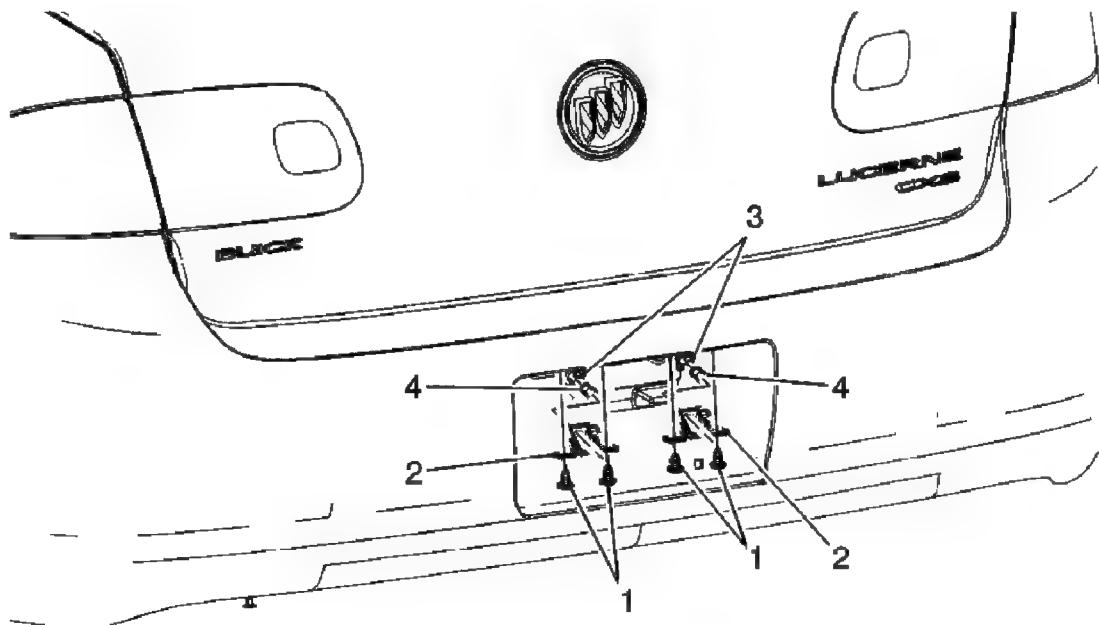
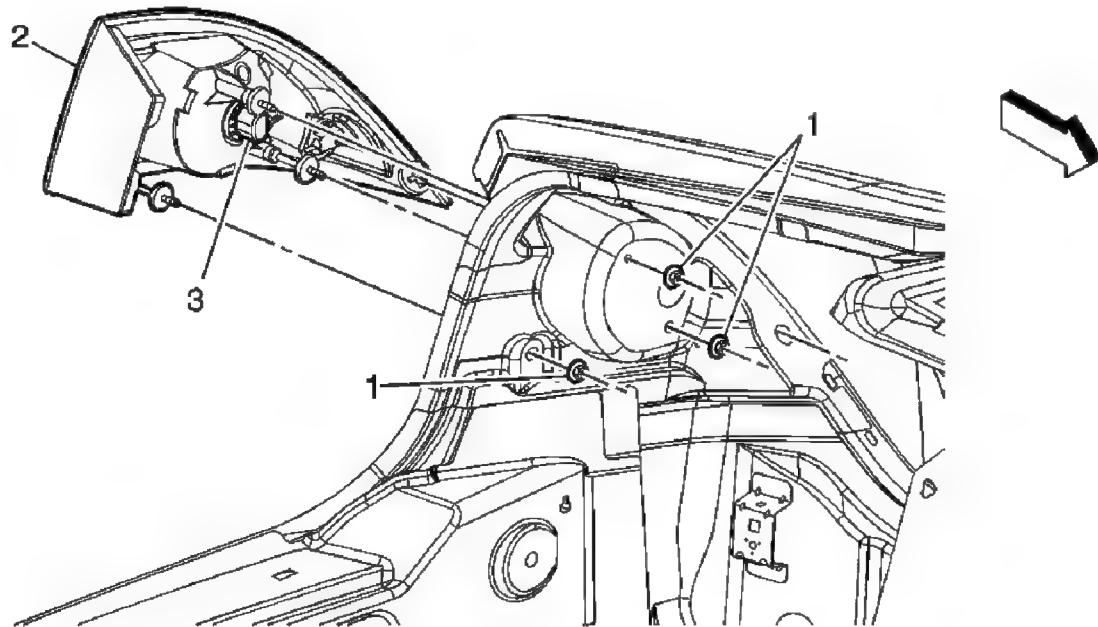


Fig. 93: Removing/Installing License Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

License Lamp Bulb Replacement

| Callout | Component Name |
|---|---|
| NOTE: Refer to <u>Fastener Notice</u> . | |
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Rear License Plate Lamp Screws (Qty: 4) Tighten: 2 N.m(18 lb in) |
| 2 | Rear License Plate Lamp Lens (Qty: 2) Tip: Push the lens forward then pull outward from the rear bumper fascia opening. |
| 3 | License Plate Lamp Socket Tip: Twist the lamp socket electrical connector counterclockwise and remove from the lens. |
| 4 | Rear License Plate Lamp Bulb (Qty: 2) Tip: Pull the bulb straight from the socket. |

TAIL LAMP REPLACEMENT

**Fig. 94: View Of Tail Lamp**

Courtesy of GENERAL MOTORS CORP.

Tail Lamp Replacement

| Callout | Component Name |
|-------------------------------|---|
| Preliminary Procedures | |
| 1 | <p>1. Open the rear compartment lid.</p> <p>2. Remove either the LH or RH side rear compartment side trim panels. Refer to <u>Rear Compartment Trim Panel Replacement</u>.</p> |
| 1 | <p>Tail Lamp Assembly Nuts (Qty: 3)</p> <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 6 N.m (53 lb in)</p> <p>Tip: Ensure the gaskets are on the tail lamp studs prior to re-assembly of the tail lamp assembly into the body rear end panel.</p> |
| 2 | <p>Tail Lamp Assembly</p> <p>Tip: Upon installation, ensure to align and seat the lower outer alignment pin and gasket to the outer body rear end panel.</p> |
| | <p>Tail Lamp Bulb Socket</p> <p>Tip:</p> |

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3

1. Rotate both bulb sockets counterclockwise from the tail lamp assembly in order to remove the tail lamp assembly.
2. Remove the tail lamp assembly from the vehicle.

TAIL LAMP BULB REPLACEMENT

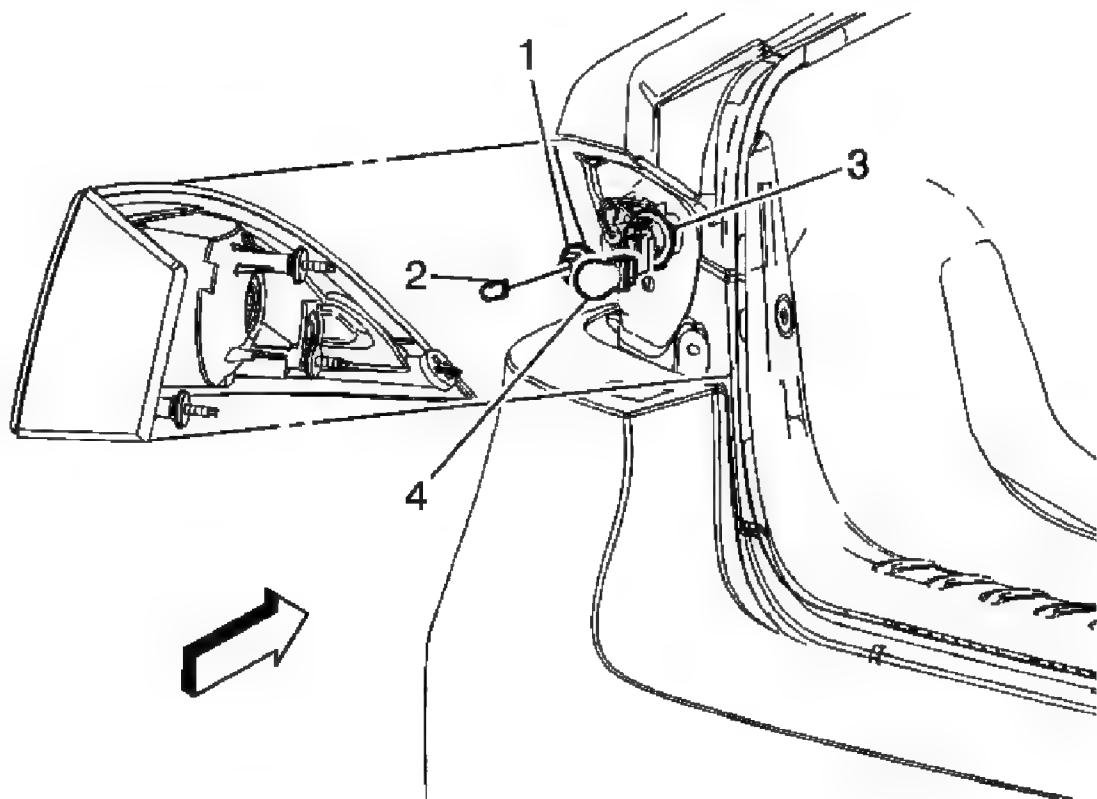


Fig. 95: Removing/Installing Tail Lamp Bulb

Courtesy of GENERAL MOTORS CORP.

Tail Lamp Bulb Replacement

| Callout | Component Name |
|--|--|
| Fastener Tightening Specifications: Refer to Fastener Tightening Specifications . | |
| Preliminary Procedure: | |
| Remove either the LR or RR tail lamp assembly. Refer to Tail Lamp Replacement . | |
| 1 | Rear Side Marker Lamp Bulb Socket |
| 2 | Rear Side Marker Lamp Bulb Tip: Pull the bulb straight from the bulb socket. |
| 3 | Stop and Turn Signal Lamp Bulb Socket |
| 4 | Stop and Turn Signal Lamp Bulb Tip: Pull the bulb straight from the bulb socket. |

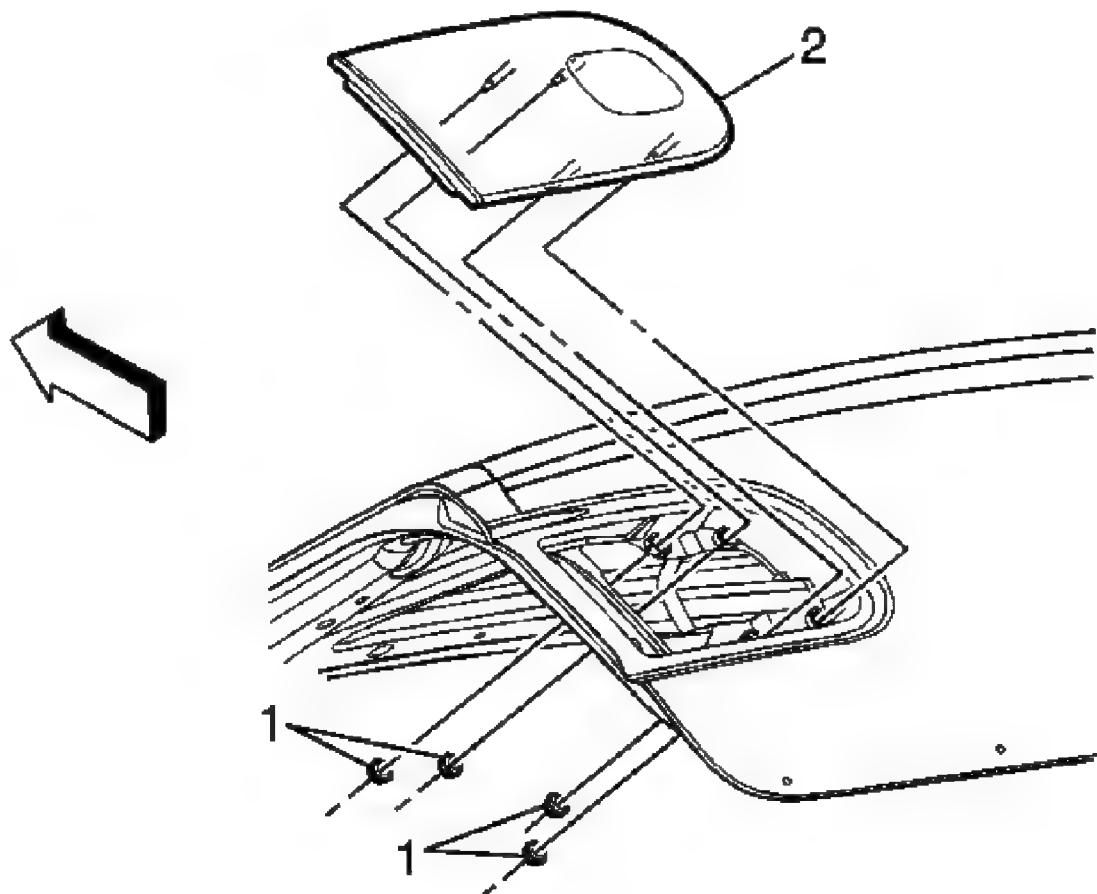
REAR AUXILIARY TURN SIGNAL LAMP REPLACEMENT

Fig. 96: Identifying Rear Auxiliary Turn Signal Lamp
Courtesy of GENERAL MOTORS CORP.

Rear Auxiliary Turn Signal Lamp Replacement

| Callout | Component Name |
|--|----------------|
| NOTE: Refer to <u>Fastener Notice</u> . | |
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| Preliminary Procedures | |
| <ol style="list-style-type: none">1. Open the rear compartment lid in order to access the rear auxiliary tail lamp assembly nuts.2. Remove the rear compartment lid trim. Refer to <u>Rear Compartment Lid Inner Panel Trim Replacement</u> . | |
| Rear Auxiliary Turn Signal Lamp Assembly Nuts (Qty: 4) | |

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| | |
|---|---|
| 1 | <p>Tighten: 10 N.m (89 lb in)</p> <p>Tip: Check to ensure the outer tail lamp bracket is secure.</p> |
| 2 | <p>Rear Auxiliary Turn Signal Lamp Assembly</p> <p>Tip</p> <ol style="list-style-type: none">1. Disconnect the electrical bulb socket for the auxiliary turn signal.2. Disconnect the electrical bulb socket for the back up lamp socket.3. Remove the rear auxiliary turn signal lamp assembly from the rear compartment lid. |

REAR TURN SIGNAL LAMP BULB REPLACEMENT

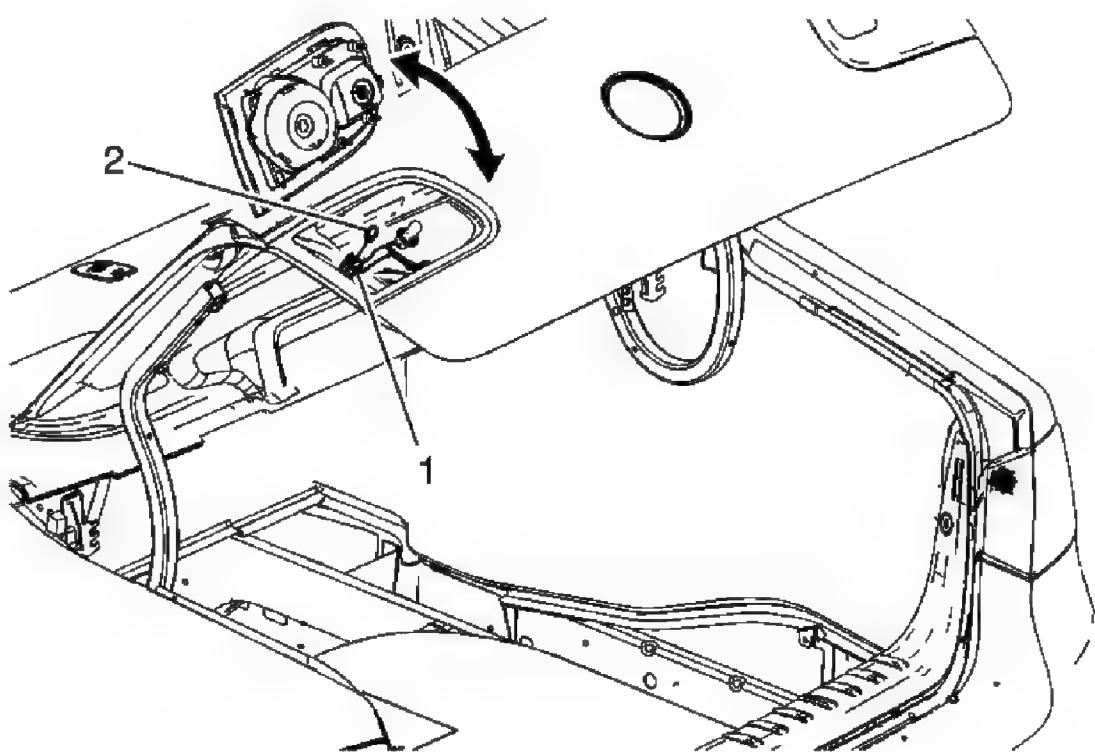


Fig. 97: REMoving/Installing Rear Turn Signal Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Rear Turn Signal Lamp Bulb Replacement

| Callout | Component Name |
|---|----------------|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| Preliminary Procedure: | |

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Auxiliary Turn Signal Lamp Replacement.

| | |
|---|--|
| 1 | Turn Signal Indicator Lamp Bulb Socket (Qty: 2) Tip: Twist the bulb socket counterclockwise a quarter turn to access the bulb. |
| 2 | Turn Signal Indicator Lamp Bulb (Qty: 2) Tip: Pull the bulb straight from the bulb socket. |

REAR COMPARTMENT COURTESY LAMP REPLACEMENT

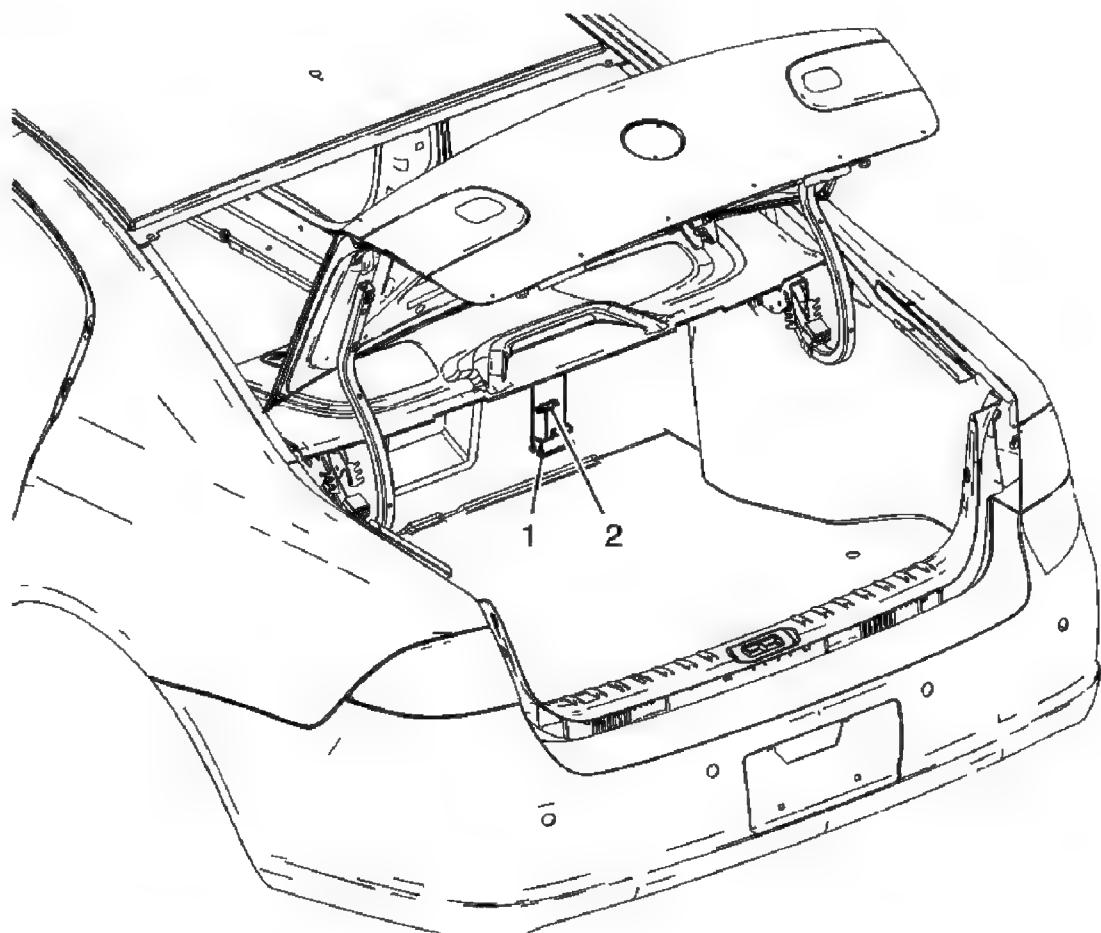


Fig. 98: Identifying Rear Compartment Courtesy Lamp
Courtesy of GENERAL MOTORS CORP.

Rear Compartment Courtesy Lamp Replacement

| Callout | Component Name |
|---|--------------------------------------|
| Fastener Tightening Specifications: Refer to <u>Fastener Tightening Specifications</u> . | |
| 1 | Rear Compartment Lamp Tip: |

| | |
|---|--|
| | 1. Use a small flat-bladed tool to release the lamp assembly from the rear shelf. 2. Disconnect the electrical connector. |
| 2 | Rear Compartment Lamp Bulb |

DESCRIPTION AND OPERATION

EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

Exterior Lamps

The exterior lighting consist of the following lamps:

- Headlamps
- Fog Lamps
- Park Lamps
- Tail Lamps
- License Lamps
- Marker Lamps
- Turn Signal Lamps
- Stop Lamps
- Backup Lamps

Headlamps

You can use the headlamps two different ways.

- Place the headlamp switch in the HEAD position for normal operations
- Place the headlamp switch in the OFF position for automatic lamp control (ALC) operation. During ALC the low beam headlamps are ON for daytime running lamp (DRL) operation in daylight conditions at reduced intensity or low beam headlamps ON at full intensity with exterior park lamps ON in low light conditions.

The body control module (BCM) applies a pulse width modulated (PWM) voltage to the headlamp module and high beam relay in the underhood fuse block. The ground for the headlamp module is supplied from G113 or G115. For normal manual low beam operation when the headlamp switch is place in the HEAD position, ground from G202 is applied through the headlamp switch and to the BCM through the headlamp switch headlamps ON signal circuit. The BCM then applies a PWM voltage to the headlamp module/high beam relay voltage supply circuit. The headlamp module then applies battery positive voltage through the left front (LF) and right front (RF) LO Beam fuses to the left and right low beam headlamps. The ground for the left headlamps is supplied by G101 and the ground for the right headlamp

is supplied by G100.

For high beam operation, ground is applied at all times to the headlamp dimmer switch from G202. When the headlamp dimmer switch is placed in the HIGH position, ground is then applied through the headlamp dimmer switch signal circuit to the BCM. The BCM then applies a ground to the headlamp high beam relay control circuit. This energizes the HI Beam relay, the relay then applies battery positive voltage through the LF and RF HI BEAM fuses to the LF and RF high beam headlamps. The ground for the left headlamps is supplied by G101 and the ground for the right headlamp is supplied by G100.

The BCM then sends a class 2 message to the instrument cluster in order to illuminate the high beam indicator lamp. If the headlamp switch is left in the HEAD position, the inadvertent power control feature will turn OFF the headlamps after 10 minutes after you turn the ignition switch to the OFF position. If you place the headlamp switch in the head position after the ignition switch has been turned OFF or if the ignition switch is in ACCY position, the headlamps will remain ON until you turn them OFF or until the battery runs dead.

HDLPS Suggested Indicator

If the park lamps are turned ON manually and the ambient light sensor detects a low light condition then the body control module (BCM) will send a class 2 message to the instrument panel cluster (IPC) to illuminate the HDLP suggested indicator.

Lights ON Warning

The body control module (BCM) activates the lights ON warning as requested by the headlamp dimmer switch. The lights ON warning sounds when the following occurs:

- The key is out of the ignition.
- The BCM determines that the drivers door is open, signal is low.
- The BCM determines that the headlamp switch is in the PARK or HEAD position.

Daytime Running Lamps (DRL)

The ambient light sensor is a light-sensitive transistor that varies its voltage signal to the body control module (BCM) in response to changes in the outside (ambient) light level. When the BCM receives this signal the BCM turns ON just the low beam headlamps at reduced intensity for the daytime running lamp (DRL) operation. A resistor wire is used (CKT312) to reduce the voltage which reduces the light intensity for the DRL's function. The ambient light sensor can also turn ON the low beam headlamps and the exterior lamps for automatic lamp control (ALC). Any function or condition that turns ON the headlamps will cancel the DRL operation (this means no reduced voltage to the low beam lights). Thirty seconds after you start the engine with the headlamp switch in the OFF position, the DRL will perform one of two actions:

- Illuminate the low beam headlamps at reduced intensity in daylight conditions
- Illuminate the low beam headlamps and exterior park lamps for low light conditions

The DRL operates when the ignition switch is in the RUN position, the parking brake is not set and the transmission is not in the PARK position. When these conditions are met and the DRL ambient light sensor indicates daylight conditions the DRL will illuminate.

Fog Lamps

The FOG LPS fuse in the underhood fuse block supplies battery positive voltage to both the coil and switch side of the FOG LP Relay. When the fog lamp switch is placed in the ON position, ground is applied from G202 through the fog lamp switch to the body control module (BCM). The BCM then applies a ground to the fog lamp relay control circuit. This energizes the FOG LP relay and applies battery positive voltage through the fog lamp voltage supply circuit to the left and right fog lamps. Ground is applied at all times to the left fog lamp from G101 and to the right fog lamp from G100. The park lamps are headlamps must be ON in order for the fog lamps to illuminate. Fog lamp operation will be cancelled whenever the park lamps are turned OFF or the high beams are turned ON. When the park lamps are turned ON, the BCM sends a class 2 message to the instrument panel cluster (IPC) to illuminate the fog lamp indicator.

Park, Tail, Marker and License Lamps

The LT PRK LAMP and RT PK LAMP fuses in the rear fuse block applies battery positive voltage to both the coil and switch side of the PARK LAMP Relay. The park lamp switch on signal circuit is grounded when the head lamp switch is in the head, park or auto position for low light operation. When the BCM receives the ground input from the park lamp switch on signal circuit the BCM then applies ground to the park lamp relay control circuit. This energizes the Park Lamp Relay, applying battery positive voltage to all the park, tail marker and license lamps.

Remote Keyless Entry Exterior Lamp Illumination

When the remote function actuation (RFA) module receives a door unlock command from the remote function actuator transmitter, the RFA module will ground the door unlock signal to the body control module (BCM), then send a class 2 signal to the BCM indicating that an UNLOCK command has been received. The BCM then will flash the park lamps twice. With all the doors closed and the remote keyless entry (RKE) transmitter is used to lock the doors the park lamps will flash twice. The park lamps will not flash if the rear compartment is opened using the RKE transmitter.

Turn Signal Lamps

The TURN/HAZ fuse in the instrument panel (I/P) fuse block supplies battery positive voltage to the body control module (BCM) for the turn signal lamps and hazard lamps. When the turn

signal switch is placed in either the TURN LEFT or TURN RIGHT position, ground is applied from G202 through the turn signal switch to the BCM the BCM then applies battery positive voltage to the front and rear turn signal lamps supply voltage circuits. The left front turn signal lamp is grounded at G101 and the right front at G100. The left rear turn lamp is grounded at G301 and the right rear at G302.

Turn Signal Reminder

The body control module (BCM) activates the turn signal warning as requested by either turn signal switch. The turn signal warning sounds when the following occurs:

- The ignition is in the RUN position.
- The turn signal switch is in either turn position, sensing, within one second, an open to battery positive voltage transition in the turn signal control circuit, left or right turn.
- The vehicle has traveled a distance of 1.2 km (0.75 mi) by counting pulses ON the vehicle speed input circuit.

The BCM turns OFF the turn signal reminder when either the ignition switch is turned to the OFF position or the turn signal switch returns to the OFF position.

Hazard Lamps

The TURN/HAZ fuse in the instrument panel (I/P) fuse block supplies battery positive voltage to the body control module (BCM) for the turn signal lamps and hazard lamps. When the hazard switch is placed in to the ON position, the driver information center (DIC) sends a signal to the BCM through the hazard switch signal circuit. The BCM then flashes all of the turn signal lamps ON and OFF.

Stop Lamps

The rear turn signal lamps are also used as the stop lamps. The TURN/HAZ fuse in the instrument panel (I/P) fuse block supplies battery positive voltage to the body control module (BCM) for the turn signal/stop lamps and hazard lamps. The CHMSL/BKUP fuse in the I/P fuse block provides battery positive voltage to the center high mounted stop lamp (CHMSL). The brake pedal position sensor receives a low reference signal and a 10-volt reference signal from the BCM. Whenever the brake pedal is applied, the brake pedal position sensor applies a variable voltage signal to the BCM through the stop lamp switch signal circuit. The BCM then applies battery positive voltage to the rear turn/stop lamps and to the CHMSL, illuminating them. The left rear turn lamp is grounded at G301 and the right rear stop/turn lamp and CHMSL is grounded at G302.

Backup Lamps

The CHMSL/BKUP fuse in the instrument panel (I/P) fuse block supplies battery positive voltage to the body control module (BCM). When the driver places the gear selector in to the

REVERSE position, the powertrain control module (PCM) sends a class 2 message to the BCM. The BCM then applies battery positive voltage to the backup lamp supply voltage circuit. The left backup lamp is grounded at G301 and the right backup lamp is grounded at G302.

Battery Rundown Protection/Inadvertent Power

The body control module (BCM) used in this vehicle controls the lighting system through circuits that enable both the exterior lamp functions of park, head and fog lamps as well as the interior lamps. The BCM opens these enabling circuits 20 minutes after the ignition switch is turned OFF with no lamp switch activity. If the ignition switch is turned to any position other than OFF or if a lamp switch is activated, during this 20 minute period the timer will reset for another 20 minutes.

INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION**Interior Lighting**

The interior lighting consist of lamps that may not be dimmed (Interior Lamps) and lamps that may be dimmed (Interior Lamps Dimming).

Interior Lamps

The first group of lamps are the interior courtesy lamps that may not be dimmed manually, these include:

- The dome lamp
- The instrument panel (I/P) compartment lamp
- The I/P courtesy lamps
- The rear compartment lamp
- The roof rail courtesy/reading lamps
- The sunshade vanity mirror lamps

Interior Lamps Features

The interior lamps system features the following functions:

- An illuminated entry feature that illuminates the courtesy lamps when entering the vehicle or activating the remote keyless entry system.
- An illuminated exit feature that illuminates the courtesy lamps when the ignition key has been removed from the ignition.
- An inadvertent power feature that supplies voltage to all interior lamps after the ignition is turned OFF. The inadvertent power feature will deactivate all interior lamps after 20 minutes to prevent battery rundown.

- A theater dimming feature that will slowly dim the interior lamps from full brightness to OFF.
- An lamp switch assembly that illuminates the courtesy lamps.
- Individual switches for control of each interior lamp that is not illuminate with the interior lamp switch.

Courtesy/Illuminated Entry Lamps

When the body control module (BCM) is in an active state (awake) it energizes the courtesy lamps supply voltage circuit. The courtesy lamps supply voltage circuit supplies voltage to all of the interior lamps, including the illuminated entry lamps (courtesy lamps). The illuminated entry lamps are turned ON when they receive a battery positive voltage from the courtesy lamp supply voltage circuit of the BCM. When the ignition is in the LOCK position the BCM will apply the courtesy lamp supply voltage circuit under the following conditions:

- The door jamb input transitions to an active state (opening a door).
- The use of the remote keyless entry (RKE) to unlock the side doors.

When the courtesy lamps supply voltage circuit and the courtesy lamp low control circuit are active the courtesy/illuminated entry lamps will illuminate. The courtesy lamps/illuminated entry lamps include the following interior lamps :

- The dome lamp
- The roof rail courtesy lamps
- The I/P courtesy lamps

When the driver uses the remote function actuator transmitter to unlock the doors, the BCM will illuminate the courtesy lamps for approximately 40 seconds, unless another BCM function causes the lamps to remain active. If the ignition switch is turned to either the RUN or START position the courtesy lamps will turn OFF immediately.

When the door latch switch signal circuit is active with the ignition in the OFF position the BCM will illuminate the courtesy lamps. The courtesy lamps will remain illuminated for approximately 25 seconds, after the door latch switch signal circuit becomes inactive, unless another BCM function causes the lamps to remain active. If the ignition switch is turned to either the RUN or START position the courtesy lamps will turn OFF immediately.

Courtesy/Illuminated Exit

The illuminated exit feature will activate the courtesy lamps when the key IN input of the BCM transitions from an active state to an inactive state (removing the ignition key). When the key is removed from the ignition, the key IN input to the BCM becomes inactive. The BCM will illuminate the courtesy lamps for approximately 25 seconds, unless another BCM function

causes the lamps to remain active.

Inadvertent Power Feature

Inadvertent power feature provides a similar function for the interior lamps as a retained accessory power feature. The BCM will energize the courtesy lamps supply voltage circuit when the BCM is in the active state (awake). When the courtesy lamps supply voltage circuit is energized, it supplies voltage to all the interior lights. The BCM will continue to supply voltage to the interior lamps after the ignition is turned OFF so that the interior lamps may be operated.

The inadvertent power feature will also act as battery run down protection by deactivate the courtesy lamps supply voltage circuit after 20 minutes once the BCM becomes inactive, ignition OFF and no BCM input activity.

Theater Dimming

The theater dimming feature that will slowly dim the interior lamps from full brightness to OFF. The following actions will over ride the theater dimming feature causing the courtesy lamps to deactivate immediately if no other BCM function commands the courtesy lamps ON:

- A transition from active to inactive of the interior lamps switch, turning OFF the interior lamps switch
- A LOCK command from the remote keyless entry system
- A last door closed locking function, locking and closing all the doors

Courtesy Lamps Manual Operation

The courtesy lamps, may be manually operated by the lamp switch assembly. When the dimmer switch is placed in the DOME position the BCM receives a ground from the courtesy lamp switch signal circuit. Upon receiving the courtesy lamp switch signal the BCM then applies battery positive voltage to the courtesy lamp supply voltage circuit, which illuminates the courtesy lamps. The voltage for all interior lamps is supplied by the courtesy lamp supply voltage circuit of the BCM, whenever the BCM is active. The interior lamp switch will override any BCM operation of the interior lamps, such as entry illumination.

Dome Lamp

The dome lamp is turned ON by the lamp switch assembly or during illuminated entry.

During illuminated entry or when the lamp switch assembly is in the DOME position, the body control module (BCM) wakes up and then energizes the courtesy lamps supply voltage circuit, supplying voltage to all interior lamps.

I/P Compartment Lamp

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When the I/P compartment is opened the I/P compartment lamp illuminates, if the courtesy lamps supply voltage circuit of the BCM is activated, BCM awake.

The I/P compartment lamp illuminates when the courtesy lamps supply circuit of the BCM supplies voltage to the I/P compartment lamp and the I/P compartment switch closes, providing a ground path.

I/P Courtesy Lamp

The I/P courtesy lamp is turned ON by the lamp switch assembly or during illuminated entry.

During illuminated entry or when the I/P dimmer switch is DOME the BCM wakes up and then energizes the courtesy lamps supply voltage circuit, suppling voltage to all interior lamps.

Rear Compartment Lamp

When the rear compartment is opened, the rear compartment lamp illuminates.

When the rear compartment is opened, the rear compartment courtesy lamp switch sends a ground signal to the BCM, waking the BCM. When the BCM wakes up it will then energize the courtesy lamps supply voltage circuit, suppling voltage to the rear compartment courtesy lamp. The rear compartment courtesy lamp switch will provide a ground path for the rear compartment courtesy lamp in order to illuminate the lamp.

Roof Rail Courtesy/Reading Lamps

The roof rail courtesy lamps are turned ON by the lamp switch assembly, the individual roof rail courtesy lamp switch or during illuminated entry.

During illuminated entry or when the I/P dimmer switch is ON the BCM wakes up and then energizes the courtesy lamps supply voltage circuit, suppling voltage to all interior lamps.

The roof rail courtesy/reading lamps can be turned ON from the individual roof rail courtesy lamp switch. The BCM supplies voltage through the courtesy lamps supply voltage circuit when the BCM is awake. Manually turning ON the roof rail courtesy lamp switch provides a ground path.

Sunshade Vanity Mirror Lamps

When the vanity mirror cover on the sunshade is opened, the sunshade mirror lamp illuminates.

The sunshade mirror lamps receive voltage from the courtesy lamps supply voltage circuit anytime the BCM is awake. The sunshade illuminated mirror lamps receive ground from their individual switches when the sunshade is open.

Interior Lamps Dimming

The second group of lamps include lamps which may be dimmed. This group uses a combination of class 2 dimming and incandescent lamps.

- The PRNDL lamp
- The door switches and window switches
- The HVAC control head assembly
- The outside rearview mirror switches
- The driver information center (DIC)
- The radio
- The lamp switch assembly
- The steering wheel controls
- The instrument panel cluster (IPC)
- The traction control switch

When the headlamp switch is placed in the PARK position, ground is supplied through the headlamp switch to body control module (BCM). The BCM also applies a voltage reference and a low reference signal to the interior lamp dimmer switch. When the interior lamp switch is varied, the position of the switch is applied through the instrument panel (I/P) dimming control circuit to the BCM. The BCM then applies a voltage to the interior lamps.

The lamps become illuminated when the park lamps are ON. The brightness of all the incandescent lamps is determined by a variable voltage signal from the dimmer switch and sent through the instrument panel lamp supply voltage circuit. The lamps are located in various components, refer to **Interior Lights Schematics**.

Incandescent Dimming

The incandescent lamps become illuminated when the park lamps are on. The brightness of all the incandescent lamps is determined by a variable voltage signal from the dimmer switch and sent through the instrument panel lamp supply voltage circuit. The incandescent lamps are located in various components, refer to **Interior Lights Dimming Schematics**.

Driver Controls and Modules

The BCM module processes the inputs and the controls. The ambient light sensor supplies the BCM with a signal for daytime conditions or for low light conditions:

- The BCM
- The DIC
- The IPC

Driver controls include the following components:

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- The I/P dimmer switch
- The door jamb switches
- The headlamp switch
- The rear compartment lid ajar switch
- The roof rail courtesy reading lamp switch
- The sunshade vanity mirror lamps switch
- The I/P compartment lamp switch

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